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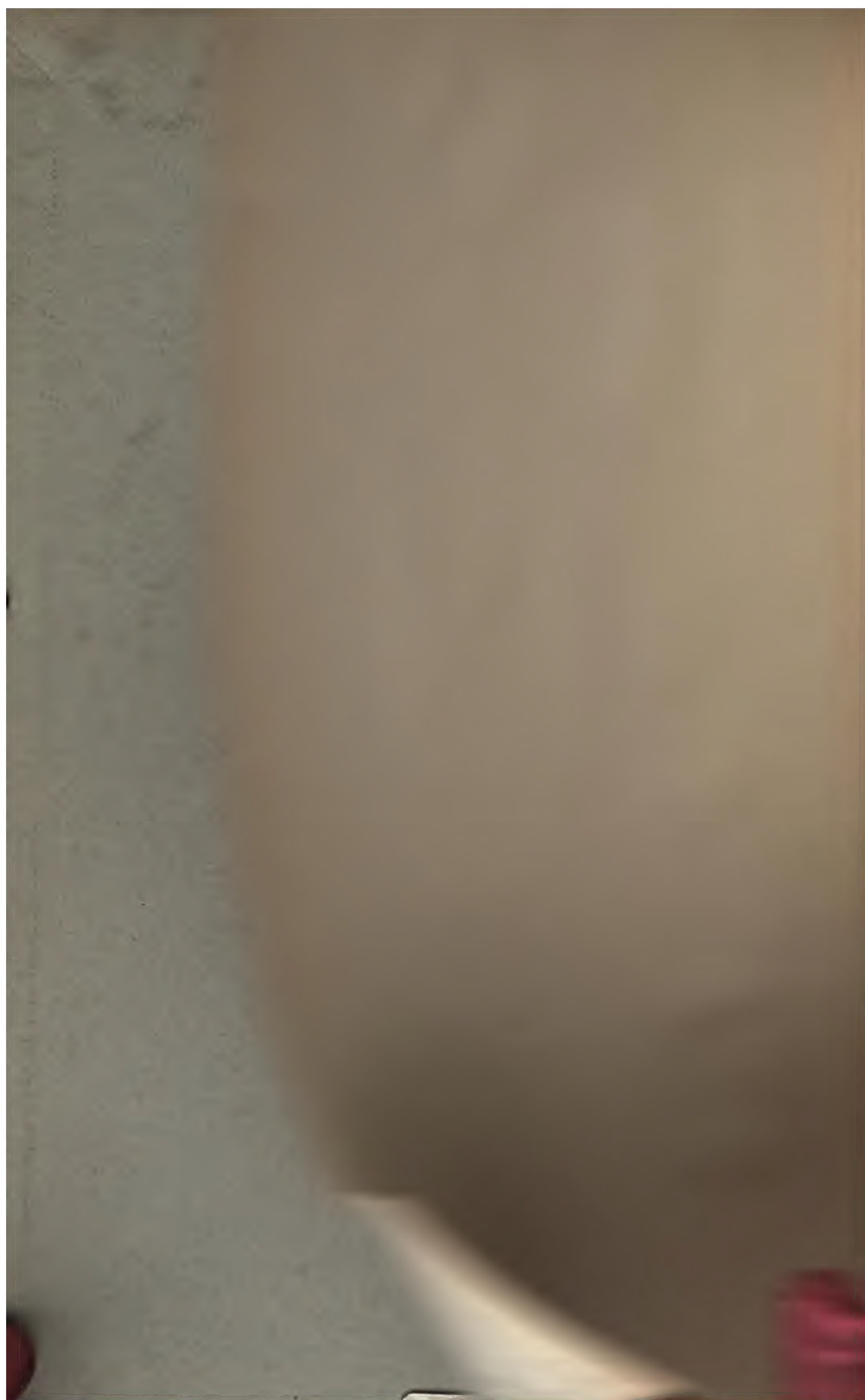
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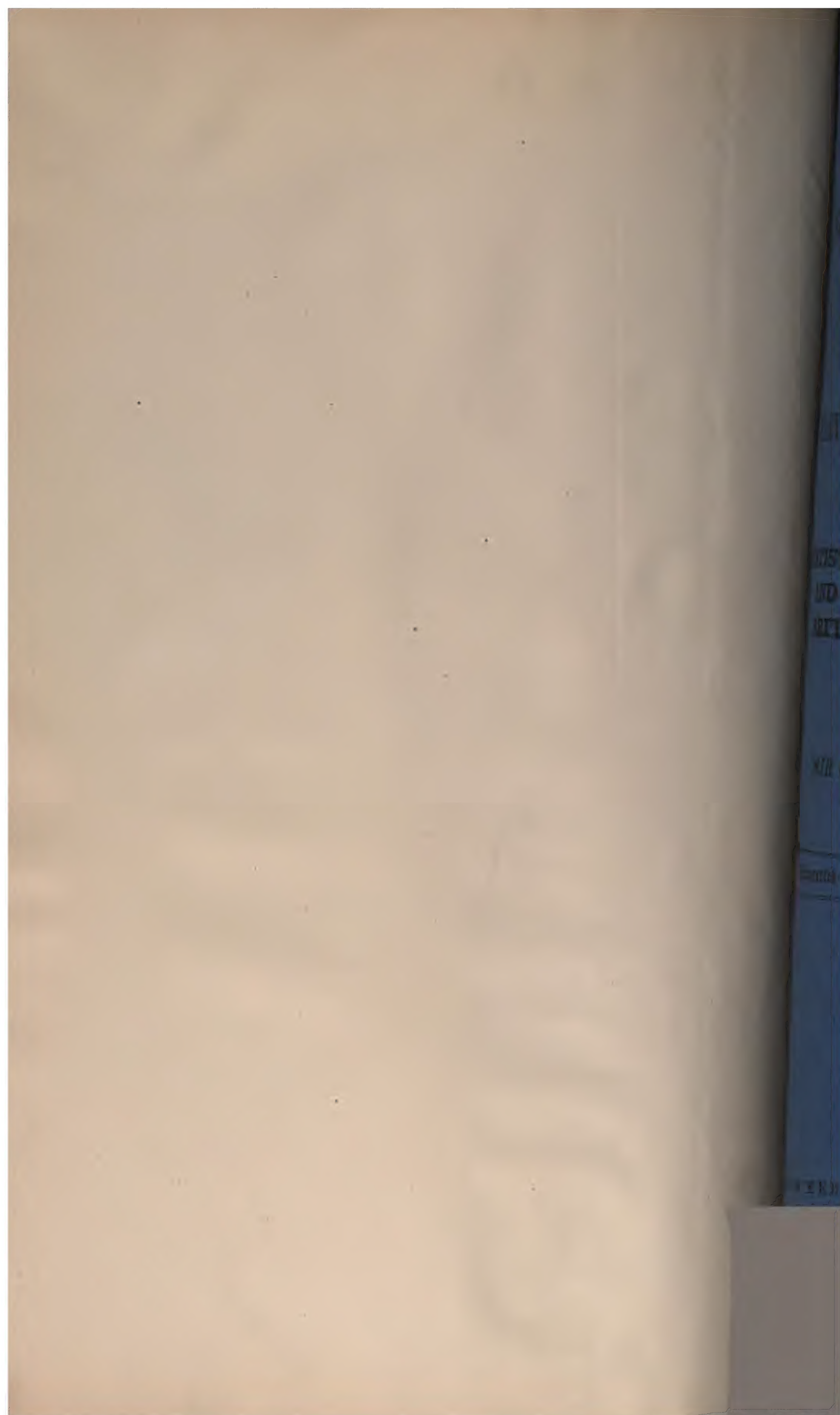


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**MINES AND QUARRIES:  
GENERAL REPORT AND STATISTICS  
For 1902.**

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**PART IV.—COLONIAL AND FOREIGN STATISTICS.**

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**STATISTICS RELATING TO PERSONS EMPLOYED, OUTPUT,  
AND ACCIDENTS AT MINES AND QUARRIES IN THE  
BRITISH COLONIES AND IN FOREIGN COUNTRIES.**

EDITED BY

**SIR CLEMENT LE NEVE FOSTER, D.Sc., F.R.S.**

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Presented to both Houses of Parliament by Command of His Majesty.

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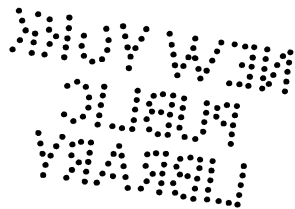
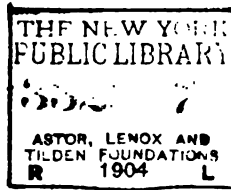
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## CONTENTS.

---

	PAGE.
Introduction .. .. .	297, 298
 British Empire and Foreign Countries :—	
Summary of Persons Employed at Mines and Quarries .. .. .	300
Summary of Output of certain Minerals .. .. .	301
Summary of Accidents and Death-rates per 1,000 Persons Employed at Mines and Quarries .. .. .	302, 303
 Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings in the British Empire :—	
United Kingdom .. .. .	305–307
 British Colonies and Dependencies :—	
Aden... .. .	308
Australia .. .. .	308–321
Bahamas .. .. .	321
Barbados .. .. .	321
Basutoland .. .. .	322
Bechuanaland Protectorate... .. .	322
British Borneo .. .. .	322
British Central Africa Protectorate .. .. .	323
British Guiana .. .. .	323, 324
British New Guinea .. .. .	325
British Solomon Islands .. .. .	325
Canada .. .. .	325–332
Cape Colony .. .. .	333–336
Ceylon .. .. .	337, 338
Channel Islands .. .. .	338
Christmas Island .. .. .	338
Cyprus .. .. .	339
Federated Malay States .. .. .	339–341
Gold Coast .. .. .	341
India .. .. .	341–347
Malta .. .. .	347
Natal .. .. .	347, 348
Newfoundland .. .. .	348, 349
New Zealand... .. .	350, 351
Nigeria .. .. .	352
Orange River Colony .. .. .	352
Redonda .. .. .	352
Rhodesia .. .. .	353
Somali Coast Protectorate .. .. .	353
Straits Settlements .. .. .	353
Transvaal .. .. .	354–356
Trinidad .. .. .	357
Turks and Caicos Islands .. .. .	357, 358
Uganda Protectorate .. .. .	358
Wei-hai-wei .. .. .	358

**Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings in Foreign Countries :—**

	PAGE.
Abyssinia ... ..	359
Algeria ... ..	359-361
Arabia ... ..	361
Argentine Republic...	361
Austria-Hungary ... ..	362-372
Belgium ... ..	375-379
Bolivia ... ..	379, 380
Bosnia and Herzegovina ... ..	373, 374
Brazil ... ..	380, 381
Bulgaria ... ..	382
Cameroons ... ..	383
Canary Islands ... ..	383
Chili ... ..	383-385
China ... ..	386, 387
Colombia ... ..	387
Congo Free State ... ..	388
Corea ... ..	388
Costa Rica ... ..	388
Cuba ... ..	388, 389
Denmark ... ..	389
Dutch East Indies ... ..	389-392
Dutch Guiana or Surinam ... ..	392
Dutch West Indies ... ..	393
Ecuador ... ..	393
Egypt ... ..	394
Eritrea ... ..	394
Formosa ... ..	394
France... ..	395-399
French Guiana ... ..	400
French Soudan ... ..	400
German East Africa ... ..	400
German Empire ... ..	401-416
German South West Africa ... ..	417
Greece... ..	417, 418
Guatemala ... ..	419
Hayti .. ..	419
Holland ... ..	419, 420
Honduras ... ..	421
Indo-China ... ..	421, 422
Italy ... ..	422-426
Ivory Coast ... ..	426
Japan ... ..	426-428
Johore... ..	428
Liberia ... ..	428
Luxemburg ... ..	428
Madagascar ... ..	428, 429

Details relating to Persons Employed, &c.—*cont.*

	PAGE.
Mexico ... ..	429-431
Morocco ... ..	431
New Caledonia ... ..	431, 432
Nicaragua ... ..	432
Norway ... ..	432, 433
Paraguay ... ..	434
Persia ... ..	434
Peru ... ..	434, 435
Philippine Islands ... ..	436
Porto Rico .. ...	436
Portugal ... ..	436-438
Portuguese East Africa ... ..	439
Roumania ... ..	439, 440
Russia ... ..	441-444
Sahara ... ..	444
Sandwich Islands ... ..	445
Senegal ... ..	445
Servia ... ..	445, 446
Siam ... ..	446
Spain ... ..	447-450
Spitzbergen ... ..	450
Sweden ... ..	450-452
Switzerland ... ..	452-455
Tunis ... ..	455, 456
Turkey ... ..	456, 457
United States... ..	458-466
Uruguay ... ..	466
Venezuela ... ..	467

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Index to Parts I., II., III., and IV. ... ..	469-493
--	---------

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## **MINES AND QUARRIES:**

### **GENERAL REPORT AND STATISTICS**

**For 1902.**

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#### **PART IV.—COLONIAL AND FOREIGN STATISTICS.**

---

##### **INTRODUCTION.**

---

This part of the General Report is intended to give general information concerning the mining and quarrying industries of the colonies and foreign countries ; it is compiled from various official and unofficial sources, which are duly indicated in every case. Great difficulties in preparing this part of the volume arise either from want of adequate official statistics or from the lateness of their publication.

The general results are summed up in Tables 283, 284, and 285, and though the figures are not complete, they are sufficient to give a fair general idea of the relative importance of mining in each country.

According to Table 283 the number of persons engaged in mining and quarrying at home and abroad exceeds  $4\frac{1}{2}$  millions, of whom, roughly speaking, one-fifth are employed in the United Kingdom and one-third in the British Empire.

More than half of the total number were employed in getting coal alone ; Great Britain employing over three-quarters of a million, the United States and Germany over half a million each, France 165,000, Belgium 135,000, Austria 123,000, and India close upon 100,000.

Turning from the working mining population to the summary of the mineral output as given in Table 284, it appears that the total amount of coal produced in the world amounted in 1902 to 800 million tons, the value of which is estimated at more than 270 million pounds sterling.

The following figures show the main sources from which the fuel supply of the world is obtained :—

Country.	Metric Tons.	Value.
United States ... ..	273,600,000	£ 75,373,000
Great Britain ... ..	230,739,000	93,521,000
Germany ... ..	150,600,000	52,654,000
Austria-Hungary ... ..	39,479,000	10,528,000
France ... ..	29,997,000	17,459,000
Belgium ... ..	22,877,000	12,081,000

A comparison of the quantity of coal obtained in 1902 with the output of the previous year, shows a net increase of 14 million tons. The British Empire increased its output by  $11\frac{1}{2}$  and the United States by  $7\frac{1}{2}$  million tons. The increase in the United States would undoubtedly have been much greater but for the strike at the anthracite collieries in 1902.

In the case of gold, the British Empire afforded more than one half of the world's supply ; Australia supplying 24 per cent., the Transvaal 12 per cent., and Canada 7 per cent. of the total. The United States contributed 27 per cent. The value of the total quantity is estimated at over 60 millions sterling.

In the case of iron, the United States with an output of 18 million tons is considerably ahead of any other country. The German Empire and Great Britain come next with about  $4\frac{1}{2}$  million tons each. It is important to point out that the quantities of iron, and indeed the quantities of the other metals included in Table 284, are those which are considered obtainable from the ores raised in the countries in question, and must not necessarily be taken as a measure of their metallurgical industries.

The total value of the figures shown in Table 284 may be roughly taken as representing over 600 millions sterling.

Table 285 shows the loss of life from accidents in mines and quarries, and the death-rates from accidents per 1,000 persons employed.

Taking coal mines for which the figures are fairly complete, it will be seen that the death-rate of the United Kingdom is 1·24, and for the British Empire 1·46 ; while for France it is 1·09, for Germany 1·93, and for the United States 3·25. The death-rate for foreign countries generally is 2·20.

While this volume was in course of preparation, Sir Clement Le Neve Foster, the editor of these statistics, died ; and it has therefore not had the advantage of his final revision. Sir Clement Foster had edited the mining statistics for the last nine years, and it was chiefly on his advice and by his efforts that the statistics were remodelled and brought into their present shape. His loss to the Department is a serious one, and it will be difficult to fill his place.

Home Office, Whitehall,  
14th May, 1904.

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**SUMMARIES.**

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**PERSONS EMPLOYED—OUTPUT—ACCIDENTS,  
1901-1902.**

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TABLE No. 283.

SUMMARY of the number of PERSONS EMPLOYED at MINES, QUARRIES, and other MINERAL WORKINGS in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the YEARS 1901 and 1902.

Country.	1901.	1902.
GREAT BRITAIN AND IRELAND ... ..	933,366	952,711
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—		
Aden ... ..	*	*
Australia ... ..	110,912	105,959
Bahamas ... ..	423	256
Barbados ... ..	100†	100†
Basutoland ... ..	*	*
Bechuanaland Protectorate ... ..	*	450
British Borneo ... ..	*	*
British Central Africa Protectorate ... ..	*	11,412
British Guiana ... ..	13,602	250
British New Guinea ... ..	*	*
British Solomon Islands... ..	*	33,295
Canada (a)... ..	33,308	16,262
Cape Colony ... ..	15,844	59,269
Ceylon ... ..	53,990†	1,200
Channel Islands ... ..	1,200	550\$
Christmas Island ... ..	550\$	*
Cyprus ... ..	*	179,951
Federated Malay States ... ..	162,577	2,913†
Gold Coast... ..	2,913†	166,755
India ... ..	142,491	*
Malta ... ..	*	3,850
Natal (including Zululand) ... ..	3,397	1,756
Newfoundland ... ..	1,421	14,283
New Zealand ... ..	15,486	*
Nigeria ... ..	*	12
Orange River ... ..	*	8,000
Redonda ... ..	—	*
Rhodesia ... ..	6,555¶	*
Somali Coast Protectorate ... ..	*	*
Straits Settlements ... ..	*	42,816
Transvaal ... ..	19,538**	*
Trinidad ... ..	*	*
Turks and Caicos Islands ... ..	*	*
Uganda Protectorate ... ..	*	*
Wei-hai-wei ... ..	*	*
TOTAL for BRITISH EMPIRE ... ..	1,517,673‡	1,592,050
FOREIGN COUNTRIES:—		
Austria-Hungary ... ..	239,984	231,035
Bosnia and Herzegovina ... ..	2,388	2,570
Belgium ... ..	172,548‡	172,218
Bulgaria ... ..	1,505	1,372
Chili ... ..	20,264††	24,538††
Corea ... ..	1,236§	1,236§
Denmark ... ..	—	56
Greenland ... ..	80	315,281
France ... ..	312,521	7,307
Algeria ... ..	6,768	2,500
Indo China ... ..	—	3,000
Madagascar ... ..	—	5,090†
New Caledonia ... ..	5,090†	16,000
Tunis ... ..	—	761,922‡†
German Empire ... ..	765,332‡†	9,500\$
Greece ... ..	9,500\$	4,169
Holland ... ..	3,964	25,100
Dutch East Indies ... ..	25,383§§	124,952
Italy ... ..	128,478	156,398 (c)
Japan ... ..	156,398‡	5,197
Luxemburg ... ..	4,714	98,196 (c)
Mexico ... ..	98,196‡	2,823 (c)
Norway ... ..	2,823‡	105,000\$
Peru ... ..	105,000\$	8,873
Portugal ... ..	9,509	*
Roumania ... ..	*	376,541\$
Russia ... ..	376,541\$	2,229
Servia ... ..	2,271	22,000¶¶
Siam ... ..	22,000¶¶	87,508
Spain ... ..	87,382	14,654
Sweden ... ..	14,583	1,671
Switzerland ... ..	1,641	557,407 (d)
United States ... ..	543,193 (b)	
TOTAL for FOREIGN COUNTRIES ... ..	3,119,292‡	3,146,343
TOTAL for the WORLD ... ..	4,636,965‡	4,738,393

\* Information not available. † Figures for 1898. ‡ Revised figures.  
§ Figures for 1900. || Returns incomplete. ¶ Employed in February, 1902.  
\*\* For six months only. †† Persons employed in Saltpetre Works only.  
‡‡ These figures include the average number of persons employed full time at Quarries see p. 408.  
§§ Including some figures for 1900. ¶¶ Figures for 1899.  
||| Including persons employed at Quarries for 1890.  
(a) For British Columbia, Nova Scotia, Ontario, and Quebec only.  
(b) Coal Miners for 1901, and only Ore Miners of Colorado, Montana, and Tennessee for 1900.  
(c) Figures for 1901.  
(d) Coal Miners and only Ore Miners of Michigan (Houghton Co.), Missouri and Montana.



RY of OUTPUT of CERTAIN MINERALS and METALS (contained in or obtained from Ore raised in the individual Countries) in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the Year 1902.

COUNTRY.	Coal.	Copper.	Fine Gold.	Iron.	Lead.	Petroleum.	Salt.	Fine Silver.	Tin.	Zinc.
	Metric Tons.	Metric Tons.	Kilos.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Kilos.	Metric Tons.	Metric Tons.
BRITAIN AND IRELAND..	230,739,369	490	116	4,470,420	17,888	25	1,924,273	4,580	4,462	9,275
COLONIES, DEPENDENT POSSESSIONS :—										
Africa .. .. .	6,968,514	25,123*	108,459	50,000*	14,691*	—	59,899 42,166 2,300	303,075*	4,225*	570*
Algeria .. .. .	—	—	—	—	—	—	—	—	—	—
Anglo-Siam Protectorate ..	—	—	—	—	—	—	—	—	—	—
Borneo .. .. .	50,721	—	895	—	—	—	—	—	—	—
Central Africa Protectorate ..	—	—	—	—	—	—	—	—	—	—
Guiana .. .. .	—	—	2,790*	—	—	—	—	—	—	—
New Guinea .. .. .	—	—	309*	—	—	—	—	—	—	—
Solomon Islands .. .. .	6,930,230	17,787	31,200	259,580*	10,433	71,327*	57,203	136,015	—	—
Tonga .. .. .	188,214	6,120*	—	—	—	—	—	—	—	—
Trinidad .. .. .	—	—	—	—	—	—	2,794	—	—	—
West Indies .. .. .	—	—	—	—	—	—	—	—	—	—
Yemen Island .. .. .	—	—	—	—	—	—	—	—	—	—
British Malay States .. .. .	—	—	465*	—	—	—	—	—	47,229	—
Sumatra .. .. .	7,543,825	—	14,420*	34,460*	—	227,374*	1,057,135	—	45*	—
Transvaal .. .. .	—	—	—	—	—	—	—	—	—	—
(including Zululand) .. .. .	802,334	—	2	—	—	—	—	—	—	—
Natal .. .. .	—	2,703	124	370,207	—	—	—	—	—	—
Orange Free State .. .. .	1,384,370	—	14,283*	—	—	—	—	20,970	—	—
River .. .. .	—	—	—	—	—	—	—	—	—	—
South Africa .. .. .	—	—	5,154*	—	—	—	—	—	—	—
Coast Protectorate .. .. .	—	—	—	—	—	—	—	—	—	—
Settlements .. .. .	—	—	—	—	—	—	—	—	—	—
Taiwan .. .. .	1,815,854	—	53,484	—	—	—	—	—	—	—
Tongatapu .. .. .	—	—	—	—	—	—	—	—	—	—
and Caicos Islands .. .. .	—	—	—	—	—	—	51,011	—	—	—
Protectorate .. .. .	—	—	—	—	—	—	—	—	—	—
L-wel .. .. .	—	—	—	—	—	—	—	—	—	—
AL FOR BRITISH EMPIRE..	266,003,411	52,208	232,507	5,184,647	43,112	208,728	3,200,221	484,020	55,958	9,851
COUNTRIES :—										
Afghanistan .. .. .	—	—	909	—	—	—	14,000*	84	—	—
Arab Republic .. .. .	—	344	45*	—	—	—	25,401*	1,405†	—	—
Hungary .. .. .	39,479,580	1,092	3,407	1,427,231	13,541	525,194	522,488	62,584	4*	8,309
Serbia and Herzegovina .. .. .	421,733	309*	—	74,340*	—	—	12,348	—	—	1,290*
Belgium .. .. .	22,877,470	—	—	64,927*	88*	—	—	—	—	6,183*
France .. .. .	—	3,600*	1	—	1,150*	—	—	298,751‡	17,222*	—
Germany .. .. .	—	—	3,917	—	—	—	11,535	—	—	—
Italy .. .. .	128,045	—	—	—	—	—	—	—	—	—
Japan .. .. .	—	20,600*	1,134*	14*	100*	—	—	54,381‡	—	—
Spain .. .. .	50,000§	—	13,680†	—	—	—	178,000‡	58,537	—	—
Sweden .. .. .	—	—	4,215	—	—	—	—	—	—	—
Switzerland .. .. .	—	—	3,732*	—	—	—	—	—	—	—
United Kingdom .. .. .	—	—	216*	—	—	—	—	—	—	—
United States .. .. .	—	—	—	420,841*	—	—	—	—	—	—
British Empire .. .. .	29,997,470	116*	—	1,622,380*	15,844*	—	883,927	240	—	—
China .. .. .	285	147*	—	236,255*	9*	—	27,263	14,080*	20*	18,844*
South Guinea .. .. .	—	—	3,674*	—	—	—	—	31*	—	14,913*
China .. .. .	181,461*	—	—	—	—	—	2,502†	—	—	—
Coast .. .. .	—	—	19*	—	—	—	—	—	—	—
Coast .. .. .	—	—	1,206*	—	—	—	—	—	—	—
Caledonia .. .. .	—	294*	—	—	—	—	—	—	—	—
al .. .. .	—	—	—	—	—	—	—	—	—	—
Empire .. .. .	150,600,214	30,578	94	4,020,068*	6,450*	—	21,600	—	—	6,440*
East Indies .. .. .	8,546	—	—	273,290*	140,331	49,725	1,583,258	178,408	31*	174,927
Guinea .. .. .	309,133	—	—	—	18,540*	—	25,000	28,200*	—	7,208*
West Indies .. .. .	191,281	—	1,175	—	—	490,913*	—	3,801	15,484	—
al .. .. .	—	—	587	—	—	—	—	—	—	—
al .. .. .	—	—	21	—	—	—	—	—	—	—
al .. .. .	—	—	121*	—	—	—	—	—	—	—
al .. .. .	—	2	—	—	—	—	—	—	—	—
al .. .. .	414,509	4,685*	18*	142,307*	22,012*	2,653	21,817*	14,718*	—	—
al .. .. .	8,945,938	27,440	3,480	55,171	1,807	103,800*	458,497	13,789*	—	52,488*
al .. .. .	68,713†	—	1,232	—	—	—	690,896	54,839	14	—
al .. .. .	—	—	1,846,825*	—	—	—	49,339†	—	—	—
al .. .. .	2,819	43,312*	10,462	—	98,422	—	—	246	1,453,900	87*
al .. .. .	—	709*	—	—	—	—	—	—	—	—
al .. .. .	—	4,996*	5	22,800*	—	—	—	5,684	—	28*
al .. .. .	—	11	—	—	—	—	4,180	—	—	—
al .. .. .	45,000	7,700*	1,830	—	100*	38,230*	15,849	200,081	—	—
al .. .. .	16,792	6,477	2	9,957	1,106	—	—	—	14	709
East Africa .. .. .	—	—	62	—	—	—	—	—	—	—
al .. .. .	105,000	—	—	—	—	320,000	90,000	—	—	—
al .. .. .	16,151,557	8,253	38,796	2,907,269	229	9,327,832	1,736,094	3,493	4	5,963
al .. .. .	133,754	190	28*	—	16*	—	—	21	—	18*
al .. .. .	—	—	—	—	250*	—	2,100*	—	4,000*	—
al .. .. .	2,807,550	52,417*	18*	3,852,044*	187,440*	—	426,434	101,054*	690*	33,995*
al .. .. .	304,733	916*	—	1,795,802*	3,282*	—	—	1,365	—	17,925*
al .. .. .	—	—	—	—	—	—	60,900	—	—	—
al .. .. .	200,000	1,302	—	—	4,100*	—	203,128‡	13,352	—	1,700
States .. .. .	273,000,961	290,151	129,371	18,107,476	244,942	11,209,817†	3,020,022	1,720,244	—	142,363
al .. .. .	—	—	92	—	—	—	—	39	—	—
al .. .. .	—	—	653†	—	—	—	10,153	—	—	—
FOREIGN COUNTRIES..	547,153,634	510,644	215,137	37,484,831	759,835	22,508,134	10,078,811	4,288,831	37,483	403,397
for the WORLD	803,157,045	571,852	447,644	42,689,478	802,947	33,868,960	13,279,032	4,753,451	93,441	503,241

†† Figures for 1900 with the exception of salt, which are for 1901.  
‡‡ Figures for 1894.

TABLE No. 285.

## SUMMARY of ACCIDENTS at MINES, QUARRIES, and other MINERAL WORKINGS in the

COUNTRY.	DEATHS FROM ACCIDENTS.										
	1901.						1902.				
	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	All Mines and Quarries.
GREAT BRITAIN AND IRELAND ..	1,075	—	56	1,131	98	1,229	1,005	—	48	1,053	1,119
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—											
Aden* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Australia:—											
New South Wales .. .. .	17	11	27	55	—	—	105	5	14	124	—
Queensland .. .. .	1	16	4	21	—	—	1	13	3	17	—
South Australia .. .. .	—	—	—	—	—	—	—	—	—	—	—
Tasmania .. .. .	—	—	—	7	—	—	—	—	—	5	—
Victoria .. .. .	4	28	—	32	—	—	1	33	—	34	—
Western Australia .. .. .	—	45	—	45	—	—	—	39	—	39	—
Bahamas* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Barbados* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Basutoland* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Bechuanaland Protectorate* ..	—	—	—	—	—	—	—	—	—	—	—
British Borneo* .. .. .	—	—	—	—	—	—	—	—	—	—	—
British Central Africa Protectorate*	—	—	—	—	—	—	—	—	—	—	—
British Guiana .. .. .	—	6	—	6	—	6	—	6	—	6	—
British New Guinea* .. .. .	—	—	—	—	—	—	—	—	—	—	—
British Solomon Islands* .. ..	—	—	—	—	—	—	—	—	—	—	—
Canada:—											
British Columbia .. .. .	102	†	14	116	—	—	139	†	13	153	—
Nova Scotia .. .. .	14	1	—	—	—	—	19	1	—	—	—
Ontario .. .. .	—	—	13	13	—	—	—	—	10	10	—
Quebec .. .. .	—	—	—	—	—	7	—	—	—	—	—
Cape Colony .. .. .	4	—	36†	—	—	—	4	—	45‡	—	—
Ceylon .. .. .	—	—	—	11	—	11	—	—	—	7	—
Channel Islands* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Christmas Island* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Cyprus* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Federated Malay States .. .. .	—	—	—	34‡	—	—	—	—	—	67‡	—
Gold Coast* .. .. .	—	—	—	—	—	—	—	—	—	—	—
India .. .. .	70	75	32	—	—	—	77	59	12	—	—
Malta* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Natal (including Zululand)† ..	43	—	—	—	—	—	18	—	—	—	—
Newfoundland .. .. .	—	—	—	—	1	1	—	—	1	—	—
New Zealand .. .. .	3	14	—	—	—	—	2	14	—	—	—
Nigeria* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Orange River* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Redonda* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Rhodesia* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Somali Coast Protectorate* ..	—	—	—	—	—	—	—	—	—	—	—
Straits Settlements* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Transvaal .. .. .	7†	19†	—	26†	—	—	23	143	—	166	—
Trinidad* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Turks and Caicos Islands* ..	—	—	—	—	—	—	—	—	—	—	—
Uganda Protectorate* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Wei-hai-wei* .. .. .	—	—	—	—	—	—	—	—	—	—	—
TOTAL FOR BRITISH EMPIRE ..	1,340	215	—	—	—	—	1,392	313	—	—	—
FOREIGN COUNTRIES:—											
Austria-Hungary:—											
Austria .. .. .	181	—	22	—	—	—	196	—	40	236	—
Hungary .. .. .	—	—	—	107	—	—	—	—	—	114	—
Bosnia and Herzegovina .. ..	7	—	1	8	—	—	2	—	—	2	—
Belgium .. .. .	157	—	2	159	6	165	144	—	—	144	1
Bulgaria .. .. .	—	—	—	—	—	—	3	—	—	—	145
France .. .. .	198	—	29	227	134	361	180	—	17	197	156
Algeria .. .. .	—	—	—	3	5	8	—	—	—	3	17
New Caledonia* .. .. .	—	—	—	—	—	—	—	—	—	—	363
German Empire .. .. .	1,127	—	162**	1,289**	231	1,520**	973	—	107**	1,080**	224
Greece* .. .. .	—	—	—	—	—	—	—	—	—	—	1,304
Holland .. .. .	2	—	—	2	—	—	2	—	—	2	—
Italy .. .. .	—	—	—	126	34	150	—	—	—	86	53
Japan* .. .. .	—	—	—	219	—	—	—	—	—	—	199
Mexico* .. .. .	—	—	—	330	—	—	—	—	—	—	—
Norway* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Peru* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Portugal .. .. .	—	—	9	9	—	—	—	—	4	4	—
Roumania* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Russia* .. .. .	—	—	—	—	—	—	—	—	—	—	—
Servia .. .. .	—	—	—	1	—	—	—	—	—	1	—
Spain .. .. .	—	—	—	225	—	—	—	—	—	255	—
Sweden .. .. .	—	—	—	—	—	—	—	—	—	—	15
Switzerland .. .. .	—	—	—	2	4	6	—	—	—	—	1
United States .. .. .	1,536†	—	—	—	—	—	1,720†	—	—	—	—
TOTAL FOR FOREIGN COUNTRIES.	3,208‡	—	—	—	—	—	3,220	—	—	—	—
TOTAL for the WORLD ..	4,548‡	—	—	—	—	—	4,612	—	—	—	—

\* Information for 1902 not available.

† Included with other mines.

‡ Kimberley Diamond Mines only.

§ Excluding Perak.

|| The accidents at coal mines relate to producing collieries only

¶ For 6 months only.



TABLE No. 285.

BRITISH EMPIRE and in FOREIGN COUNTRIES during the Years 1901 and 1902.

DEATH-RATES PER 1,000 PERSONS EMPLOYED.												COUNTRY.
1901.						1902.						
Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	
1'36	—	1'20	1'35	1'04	1'32	1'24	—	1'07	1'23	1'23	1'23	GREAT BRITAIN AND IRELAND.
—	—	—	—	—	—	—	—	—	—	—	—	BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—
—	—	—	—	—	—	—	—	—	—	—	—	Aden.*
1'37	'91	2'22	1'50	—	—	8'01	'47	1'36	3'68	—	—	Australia:—
'79	1'62	1'51	1'57	—	—	'75	1'44	1'17	1'31	—	—	New South Wales.
—	—	—	—	—	—	—	—	—	—	—	—	Queensland.
—	—	—	1'01	—	—	—	—	—	'84	—	—	South Australia.
4'84	1'01	—	1'12	—	—	'77	1'26	—	1'24	—	—	Tasmania.
—	2'89	—	2'52	—	—	—	2'19	—	2'10	—	—	Victoria.
—	—	—	—	—	—	—	—	—	—	—	—	Western Australia
—	—	—	—	—	—	—	—	—	—	—	—	Bahamas.*
—	—	—	—	—	—	—	—	—	—	—	—	Barbados.*
—	—	—	—	—	—	—	—	—	—	—	—	Basutoland.*
—	—	—	—	—	—	—	—	—	—	—	—	Bechuanaland Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	British Borneo.*
—	'44	—	'44	—	'44	—	'53	—	'53	—	'53	British Central Africa Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	British Guiana.
—	—	—	—	—	—	—	—	—	—	—	—	British New Guinea.*
—	—	—	—	—	—	—	—	—	—	—	—	British Solomon Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Canada:—
25'67	†	3'55	14'64	—	—	34'65	†	3'59	19'75	—	—	British Columbia.
1'83	1'13	—	—	—	—	2'36	1'31	—	—	—	—	Nova Scotia.
—	—	4'77	3'76	—	1'40	—	—	4'72	3'33	—	—	Ontario.
1'55	—	3'21†	—	—	'20	1'82	—	3'73†	—	—	'40	Quebec.
—	—	—	'84	—	—	—	—	—	'18	—	'12	Cape Colony.
—	—	—	—	—	—	—	—	—	—	—	—	Ceylon.
—	—	—	—	—	—	—	—	—	—	—	—	Channel Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Christmas Island.*
—	—	—	'34‡	—	—	—	—	—	'32‡	—	—	Cyprus.*
—	—	—	—	—	—	—	—	—	—	—	—	Federated Malay States.
—	—	—	—	—	—	—	—	—	—	—	—	Gold Coast.*
'73	2'84	1'42	—	—	—	'78	2'13	'40	—	—	—	India.
12'06	—	—	—	—	—	4'16	—	—	—	—	—	Malta.*
1'09	1'10	—	—	1'05	'70	'69	1'23	2'23	2'23	4'62	3'42	Natal (including Zululand).†
—	—	—	—	—	—	—	—	—	—	—	—	Newfoundland.*
—	—	—	—	—	—	—	—	—	—	—	—	New Zealand.
—	—	—	—	—	—	—	—	—	—	—	—	Nigeria.*
—	—	—	—	—	—	—	—	—	—	—	—	Orange River.*
—	—	—	—	—	—	—	—	—	—	—	—	Redonda.*
—	—	—	—	—	—	—	—	—	—	—	—	Rhodesia.*
—	—	—	—	—	—	—	—	—	—	—	—	Somali Coast Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	Straits Settlements.*
1'79†	1'22†	—	1'33†	—	—	4'23	3'83	—	3'88	—	—	Transvaal.
—	—	—	—	—	—	—	—	—	—	—	—	Trinidad.*
—	—	—	—	—	—	—	—	—	—	—	—	Turks and Caicos Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Uganda Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	Wei-hai-wei.*
1'45	1'55	—	—	—	—	1'46	2'02	—	—	—	—	TOTAL FOR BRITISH EMPIRE.
FOREIGN COUNTRIES:—												
1'39	—	'93	—	—	—	1'60	—	1'73	1'62	—	—	Austria-Hungary:—
—	—	—	1'43	—	—	—	—	—	1'55	—	—	Austria.
4'74	—	2'76	3'72	—	—	1'27	—	—	'85	—	—	Hungary.
1'02	—	4'87	1'18	'16	'96	1'07	—	—	1'06	'03	'84	Bosnia and Herzegovina.
—	—	—	—	—	—	2'19	—	—	—	—	—	Belgium.
1'21	—	1'78	1'26	1'01	1'16	1'09	—	1'07	1'09	1'16	1'12	Bulgaria.
—	—	—	1'10	1'24	1'18	—	—	—	'99	3'97	2'74	France.
2'32	—	—	2'12††	1'54	2'01	1'93	—	—	1'80††	1'50	1'74	Algeria.
1'47	—	—	1'47	—	—	1'27	—	—	1'27	—	—	New Caledonia.*
—	—	—	1'86	'42	1'17	—	—	—	1'36	'91	1'11	German Empire.
—	—	—	1'40	—	—	—	—	—	—	—	—	Greece.*
—	—	—	3'37	—	—	—	—	—	—	—	—	Holland.
—	—	—	—	—	—	—	—	—	—	—	—	Italy.
—	—	—	—	—	—	—	—	—	—	—	—	Japan.*
—	—	—	—	—	—	—	—	—	—	—	—	Mexico.*
—	—	—	—	—	—	—	—	—	—	—	—	Norway.*
—	—	—	—	—	—	—	—	—	—	—	—	Peru.*
—	—	2'24	1'88	—	—	—	—	1'15	'96	—	—	Portugal.
—	—	—	—	—	—	—	—	—	—	—	—	Roumania.*
—	—	—	—	—	—	—	—	—	—	—	—	Russia.*
—	—	—	'44	—	—	—	—	—	'45	—	—	Servia.
—	—	—	2'57	—	—	—	—	—	2'91	—	—	Spain.
—	—	—	—	—	'68	—	—	—	—	—	1'09	Sweden.
—	—	—	4'72	3'29	3'66	—	—	—	—	'81	'60	Switzerland.
3'102‡	—	—	—	—	—	3'255‡	—	—	—	—	—	United States.
2'34†	—	—	—	—	—	2'20	—	—	—	—	—	TOTAL FOR FOREIGN COUNTRIES.
1'99†	—	—	—	—	—	1'91	—	—	—	—	—	TOTAL for the WORLD.

\*\* Including accidents at Smelting Works.

†† This death-rate represents the persons insured in the mining and smelting branch of the German Official Insurance Association.

For true mining death-rates in Prussia see p. 413.

‡ The figures relate to 23 of the principal coal-producing States.

§ Revised figures.



BRITISH EMPIRE.

GREAT BRITAIN AND IRELAND,

WITH THE

ISLE OF MAN.

The following Tables, 286 to 291, summarize the results of Parts II. and III. of the General Report :—

TABLE 286.

PERSONS EMPLOYED at all the MINES for the Years 1901 and 1902.

Year.	Total Number of Mines at Work.	Under-ground.			Above-ground.			Total Under and Above Ground.
		Males.	Females.	Total.	Males.	Females.	Total.	
1901 .. ...	4,128	666,626	None	666,626	166,964	5,588	172,552	839,178
1902 ... ..	4,052	680,936	None	680,936	168,993	5,674	174,667	855,603
Increase or decrease ...	- 76	+ 14,310	—	+ 14,310	+ 2,029	+ 86	+ 2,115	+ 16,425

TABLE 287.

PERSONS EMPLOYED at QUARRIES more than 20 feet deep during the Years 1901 and 1902.

Year.	Total Number of Quarries at Work.	INSIDE THE QUARRIES, i.e., inside the actual pits, holes, or excavations.			OUTSIDE THE QUARRIES, i.e., outside the actual pits, holes, or excavations.			Total Number of Persons Employed Inside and Outside the Quarries.
		Males.	Females.	Total Inside.	Males.	Females.	Total Outside.	
1901 ... ..	6,993	59,964	4	59,968	34,181	39	34,220	94,188
1902 ... ..	7,208	62,428	1	62,429	34,643	36	34,679	97,108
Increase or decrease	+ 215	+ 2,464	- 3	+ 2,461	+ 462	- 3	+ 459	+ 2,920

GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—continued.

TABLE 288.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, and other WORKINGS.\*

Mineral.	1901.			1902.		
	Quantity.		Value at the Mines and Quarries.	Quantity.		Value at the Mines and Quarries.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Alum shale ... ..	3,954	4,017	494	5,664	5,755	708
Arsenic ... ..	3,361	3,415	4,375	829	842	862
Arsenical pyrites ... ..	2,578	2,619	39,454	2,131	2,165	19,322
Barytes ... ..	27,618	28,056	27,810	23,608	23,987	22,414
Bauxite ... ..	10,191	10,355	2,903	9,047	9,192	2,679
Bog ore ... ..	2,606	2,648	651	4,905	4,984	1,226
Chalk... ..	4,328,344	4,397,804	196,451	4,395,673	4,406,213	193,757
Chert and Flint ... ..	130,567	132,862	19,887	99,344	100,938	17,413
Clay ... ..	14,161,877	14,389,141	1,597,482	15,304,136	15,549,731	1,758,884
Coal ... ..	219,046,945	222,562,110	102,486,552	227,095,042	230,739,359	93,521,407
Copper ore ... ..	6,407	6,510	25,766	5,662	5,753	14,715
Copper precipitate ... ..	585	391	2,554	450	457	3,565
Fluor spar ... ..	4,214	4,282	2,226	6,287	6,388	3,186
Gold ore ... ..	16,374	16,637	13,920	29,953	30,434	12,621
Gravel and Sand ... ..	1,958,929	1,990,365	149,188	2,067,745	2,100,927	157,741
Gypsum ... ..	200,766	203,988	68,930	224,669	228,274	78,969
Igneous Rocks ... ..	5,049,312	5,130,341	1,323,325	5,466,964	5,554,696	1,400,266
Iron ore ... ..	12,275,198	12,472,186	3,222,460	13,426,004	13,641,459	3,288,101
Iron pyrites ... ..	10,238	10,402	4,764	9,168	9,315	4,154
Lead ore ... ..	27,976	28,425	224,109	24,606	25,001	175,962
Limestone (other than Chalk) ... ..	11,180,579	11,360,000	1,257,381	12,172,851	12,368,196	1,382,132
Manganese ore ... ..	1,646	1,672	894	1,278	1,299	682
Mica ... ..	3,165	3,216	1,266	8,542	8,679	3,047
Natural gas ... ..	—	—	—	c. ft. 150,000	c. mts. 4,247	30†
Ochre, Umber, &c. ... ..	14,542	14,775	13,917	16,963	17,235	22,406
Oil shale ... ..	2,354,356	2,392,138	589,162	2,107,534	2,141,355	500,804
Petroleum ... ..	8	8	19	25	25	60
Phosphate of lime ... ..	79	80	136	86	87	109
Salt ... ..	1,783,056	1,811,670	572,990	1,893,881	1,924,273	577,333
Sandstone ... ..	5,115,675	5,197,769	1,637,021	5,483,130	5,571,121	1,798,879
Slate ... ..	488,772	496,616	1,304,647	517,363	525,665	1,501,789
Sulphate of strontia ... ..	16,651	16,918	16,651	32,281	32,799	32,281
Tin ore (dressed) ... ..	7,288	7,405	478,559†	7,560	7,681	513,872
Uranium ore ... ..	79	80	2,923	52	53	2,028
Wolfram ... ..	21	21	408	9	9	273
Zinc ore ... ..	23,752	24,133	70,764	25,060	25,462	91,207
Total values ... ..	—	—	115,360,039	—	—	107,104,884

\* This table does not include the produce of quarries less than 20 feet deep except in the case of bog ore, iron ore, ochre, phosphate of lime, sulphate of strontia, tin ore and wolfram.  
† This value was incorrectly given as £458,559 in Part III.  
‡ " " " " " £30,000 " "



## GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—continued.

TABLE 289.

SUMMARY of the METALS obtainable by SMELTING from the ORES in the preceding TABLE.

Metal.	1901.			1902.		
	Quantity.		Value at the Average Market Price.	Quantity.		Value at the Average Market Price.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Aluminium ... ..	(a)	—	(a)	(a)	—	(a)
Copper ... ..	532	541	37,661	482	490	27,321
Gold ... ..	ozs. 6,225	kilos. 194	22,042	ozs. 4,181	kilos. 130	14,570
Iron ... ..	4,091,908	4,157,573	12,826,622	4,399,814	4,470,420	14,244,937
Lead ... ..	20,034	20,355	254,599	17,704	17,988	198,875
Silver ... ..	ozs. 174,466	kilos. 5,427	19,764	ozs. 146,606	kilos. 4,560	14,737
Sodium ... ..	350	356	51,000	550	559	79,500
Tin ... ..	4,560	4,633	556,571	4,392	4,462	532,292
Zinc ... ..	8,418	8,553	149,174	9,129	9,275	175,125
Total values ... ..	—	—	13,917,433	—	—	15,287,357

(a) Information not supplied.

TABLE 290.

FATAL ACCIDENTS and DEATHS at all the MINES for the Years 1901 and 1902.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate from Accidents.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.	Per 1,000 Persons employed Under-ground.	Per 1,000 Persons employed Above-ground.	Per 1,000 Persons employed Under and Above Ground.
1901 ... ..	926	152	978	978	153	1,131	1·47	·89	1·35
1902 ... ..	828	120	948	933	120	1,053	1·37	·69	1·23
Increase or decrease ...	+ 2	— 32	— 30	— 45	— 33	— 78	— ·10	— ·20	— ·12

TABLE 291.

DEATHS from ACCIDENTS at QUARRIES\* during the Years 1901 and 1902.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate per 1,000 Persons employed.		
	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.
1901 ... ..	85	12	97	86	12	98	1·43	·35	1·04
1902 ... ..	97	16	113	103	16	119	1·65	·46	1·23
Increase or decrease ...	+ 12	+ 4	+ 16	+ 17	+ 4	+ 21	+ ·22	+ ·11	+ ·19

\* More than 20 feet deep.

BRITISH COLONIES AND DEPENDENCIES.

Aden.

Salt is made by the evaporation of sea-water, and the Government revenue is partly obtained from duty upon this product.

TABLE 292.

	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
Salt* ... ..	Statute Tons. 87,800	Metric Tons. 89,209	£ 34,885	Statute Tons. 58,953	Metric Tons. 59,899	£ 23,361

Australia.

The principal mineral product of the Commonwealth of Australia is gold. The output in 1902 was 3,487,037 ozs. (108,459 kils.) of fine gold, or roughly speaking one-fourth of the total quantity raised in the world. The most productive of the six States is Western Australia, with an output more than twice as large as that of any one of its sisters. These in order of production may be arranged as follows :—Victoria, Queensland, New South Wales, Tasmania, South Australia.

The Commonwealth is now producing nearly 7 million tons of coal annually ; more than 86 per cent. of the total is furnished by New South Wales.

Tasmania is the great copper producing State, thanks especially to the yield of the Mount Lyell district.

The famous mines at Broken Hill in New South Wales, produce far more silver lead ore than all the other five States put together.

Full details concerning each individual State will be found under its own special heading.

TABLE 293.

PERSONS EMPLOYED at all MINES in the COMMONWEALTH of AUSTRALIA during the Years 1901 and 1902.

State.	1901.			1902.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
New South Wales	†	†	36,615	†	†	33,695
Queensland ...	†	†	13,353	†	†	12,942
South Australia ...	†	†	7,007	†	†	7,350
Tasmania ... ..	†	†	6,923	†	†	5,934
Victoria ... ..	†	†	28,670	†	†	27,479
Western Australia	9,119	8,760	17,879	9,793	8,766	18,559
Total ... ..	—	—	110,447	—	—	105,959

\* Statistics of Mineral Production in India in the ten years 1893 to 1902. Calcutta, 1903, p 2  
† Not stated.



## AUSTRALIA—continued.

TABLE 294.

QUANTITY and VALUE of MINERAL produced in the COMMONWEALTH OF AUSTRALIA during the Years 1901 and 1902.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alunite ... ..	3,146	3,196	9,438	3,644	3,702	10,932
Antimony and Antimony Ore.	88	89	1,183	56	57	542
Asbestos ... ..	46	47	45	—	—	—
Bismuth ... ..	21	21	6,666	10	10	3,100
" Ore ... ..	20	20	3,684	1	1	123
Bluestone ... ..	94,807	96,328	12,386	79,144	80,414	9,601
Chrome Iron Ore ...	2,483	2,523	7,774	500	508	1,740
Clays ... ..	—	—	11,500	—	—	13,000
Coal ... ..	6,880,651	6,991,068	2,623,046	6,858,453	6,968,514	2,662,455
Cobalt ... ..	111	113	1,051	36	37	845
Coke ... ..	128,882	130,950	105,665	126,872	128,908	89,603
Copper ... ..	25,500	25,909	1,925,556	23,321	23,695	1,296,315
" Ore ... ..	24,643	25,039	261,987	14,827	15,063	169,844
Diamonds ... ..	carats 9,322	grams 1,914	9,756	carats 11,995	grams 2,464	11,326
Fireclay ... ..	17	17	35	5	5	11
Gems, other than opal ...	—	—	7,000	—	—	5,000
Gold ... ..	ozs. 3,868,548	kilos. 120,216	14,189,941	ozs. 3,908,725*	kilos. 121,574	15,207,804
Granite ... ..	4,000	4,064	1,100	2,770	2,814	1,095
Gypsum ... ..	—	—	—	3,227	3,279	3,630
Infusorial Earth... ..	300	305	1,500	400	406	2,000
Iron Ore ... ..	1,042	1,039	632	102,386	104,029	71,075
" Oxide of ... ..	129	131	229	188	191	395
Ironstone, Flux ... ..	24,705	25,101	16,782	18,355	18,650	12,780
Lead Carbonate† ...	1,915	1,940	82,690	106	108	2,548
" Pig ... ..	1,986	2,018	25,526	6,447	6,550	70,119
Limestone... ..	49,916	50,716	14,384	30,735	31,228	14,127
Manganese Ore ... ..	362	367	1,149	4,618	4,692	17,051
Molybdenite ... ..	—	—	—	15	15	1,841
Oil Shale ... ..	54,774	55,653	41,489	62,880	63,889	59,717
Opal ... ..	—	—	127,400	—	—	147,000
Platinum ... ..	ozs. 389	kilos. 12	779	ozs. 375	kilos. 12	750
Plumbago ... ..	—	—	—	1	1	6
Porphyry ... ..	18,728	19,029	2,803	26,713	27,142	3,262
Sandstone... ..	26,730	27,159	7,890	20,208	20,532	6,302
Salt ... ..	43,000	43,344	47,873	41,500	42,166	51,875
Silver ... ..	ozs. 1,080,931	kilos. 33,621	120,334	ozs. 1,899,512	kilos. 59,081	189,595
Silver Lead Ore ... ..	447,387	454,567	2,023,426	430,254	437,160	1,573,700
Tin Ingots ... ..	2,445	2,455	289,393	2,403	2,441	290,464
" Ore ... ..	2,565	2,606	143,951	2,865	2,910	159,430
Volcanic Ash ... ..	87,920	89,331	6,960	47,605	48,369	3,768
Wolfram ... ..	77	78	1,145	55	56	1,167
Zinc Ore ... ..	632	642	4,057	1,261	1,281	10,625
Sundries (including some Building Stone).	—	—	191,905	—	—	200,868
Total ... ..	—	—	22,330,109	—	—	22,376,883

\* Estimated to contain 3,487,037 ozs. (kilos. 108,459) of fine gold.

† Product of the leaching plants at Broken Hill, New South Wales.

## AUSTRALIA—continued.

TABLE 295.

ACCIDENTS at all MINES in the COMMONWEALTH of AUSTRALIA during the Years 1901 and 1902.

State.	1901.		1902.	
	Number of Deaths from Accidents.	Death-rate per 1,000 persons employed.	Number of Deaths from Accidents.	Death-rate per 1,000 persons employed.
New South Wales ... ..	55	1·50	124	3·68
Queensland ... ..	21	1·57	17	1·31
South Australia ... ..	*	*	*	*
Tasmania ... ..	7	1·01	5	·84
Victoria ... ..	32	1·12	34	1·24
Western Australia ... ..	45	2·52	39	2·10
Total ... ..	160	1·45	219	2·07

## NEW SOUTH WALES.†

Coal and the ores of copper, gold, lead and silver are the principal minerals worked in this State.

*Coal.*—The existence of seams of coal was known in very early days and was the reason for the name of the State. It is reckoned that New South Wales has altogether yielded 103,387,070 tons of coal, valued at £41,701,443 of which more than 101 millions have been obtained since 1857. The output did not reach one million tons annually till the year 1871; it now approaches six millions.

Excluding lignite and seams of Triassic age, it is reckoned that the main coal-bearing rocks of the Colony extend over an area of 24,000 to 28,000 square miles around the seaport of Sydney.

*Copper.*—There was a decrease of £104,379 in the value of the copper produced in 1902 compared with the year 1901 which is attributed to the drought, and the consequent closing down of several of the largest mines for a good part of the year. The principal mine at the present time is at Cobar.

*Diamonds.*—Diamonds are found in several parts of the Colony; but the bulk of those obtained in 1902 came from Copeton (Boggy Camp) Field.

*Gold.*—There is an increase of 33,228 ozs. in the output of 1902 compared with 1901. The most important gold-yielding districts in 1902 were Bathurst, Cobar, Lachlan, Mudgee, Peel and Uralla, Southern, and Tumut and Adelong.

Dredging for gold was continued in 1902. There were 21 "bucket" dredges and six "suction" dredges in operation during the year, and the quantity obtained thereby was 25,473 ozs.

*Silver and lead.*—The decrease of £522,003 in the value of silver-lead and lead is due to low prices which caused all but four of the mines on the Broken Hill Field to suspend their output of ore. The silver and lead mining of the Colony is practically concentrated at Broken Hill, in the Albert Mining District.

\* Not stated.

† Annual Report of the Department of Mines for 1902: Sydney, 1903.



AUSTRALIA.—NEW SOUTH WALES—*continued.*

TABLE 296.

PERSONS EMPLOYED at all MINES during the Years 1901 and 1902.\*

Kind of Mines.	1901.			1902.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	9,644	2,547	12,191	10,050	2,765	12,815
Gold { alluvial ...	—	—	5,409†	—	—	5,434‡
	quartz ...	—	6,655	—	—	5,176
Shale ... ..	148	76	224	202	97	299
Silver, Lead and Zinc.	—	—	6,298	—	—	5,382
Other mines ...	—	—	5,838	—	—	4,589
Total ... ..	—	—	36,615	—	—	33,695

TABLE 297.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.§

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alunite ... ..	3,146	3,196	9,438	3,644	3,702	10,982
Antimony and Antimony ore ...	88	89	1,183	56	57	542
Bismuth ... ..	21	21	6,665	10	10	3,100
Chrome iron ore ... ..	2,483	2,523	7,774	500	508	1,740
Coal ... ..	5,968,426	6,064,205	2,178,929	5,942,011	6,037,366	2,206,598
Cobalt ... ..	111	113	1,051	34	35	304
Coke ... ..	128,882	130,950	105,665	126,872	128,908	89,605
Copper (ingots) ... ..	5,688	5,779	383,098	4,945	5,024	256,802
„ (ore and regulus)... ..	1,114	1,132	30,204	3,850	3,912	52,121
Diamonds ... ..	carats 9,322	grams 1,914	9,756	carats 11,995	grams 2,464	11,326
Fireclay (exported) ... ..	17	17	35	5	5	11
Gold ... ..	ozs. 267,061	kilos. 8,307	921,282	ozs. 300,289	kilos. 9,340	1,080,773
Iron stone flux   ... ..	4,136	4,202	3,536	13,555	13,773	10,690
Iron, oxide of (exported) ... ..	129	131	229	188	191	395
Lead (pig) ... ..	1,425	1,448	17,811	4,505	4,577	45,110
„ (carbonate)¶... ..	1,915	1,946	82,690	106	108	2,548

\* Annual Report of the Department of Mines for 1901, pp. 4 and 92; and for 1902, pp. 4 and 87.

† Including 473 Chinese.

‡ 336

§ Annual Report of the Department of Mines for 1902, pp. 2, 43, 44, 47, and 51.

|| Used for metallurgical works.

¶ The lead carbonate is a product of the leaching plants at Broken Hill.

AUSTRALIA.—NEW SOUTH WALES—continued.

TABLE 297—continued.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
Limestone (flux) ... ..	Statute Tons. 26,570	<i>Metric Tons.</i> 28,998	£ 5,794	Statute Tons. 17,352	<i>Metric Tons.</i> 17,630	£ 10,615
Manganese ore ... ..	12	12	24	—	—	—
Molybdenite ... ..	—	—	—	15	15	1,841
Oil shale ... ..	54,774	55,653	41,489	62,880	63,889	59,717
Opal ... ..	—	—	120,000	—	—	140,000
Platinum ... ..	oss. 589	<i>kilos. 12</i>	779	oss. 375	<i>kilos. 12</i>	750
Silver (ingots and matte) ...	oss. 448,501	<i>kilos. 13,950</i>	50,484	oss. 1,067,224	<i>kilos. 33,194</i>	105,360
Silver lead and ore* ... ..	417,078	423,772	1,803,979	381,059	387,174	1,334,819
Tin (ingots) ... ..	656	667	76,851	445	452	52,636
„ ore ... ..	11	11	464	23	23	1,070
Zinc ore ... ..	632	642	4,057	1,261	1,281	10,625
Sundry minerals (including building stone, &c.).	—	—	143,368	—	—	148,115
Total value ... ..	—	—	6,006,635	—	—	5,638,145

TABLE 298.

DEATHS from ACCIDENTS at all MINES during the Years 1901 and 1902.†

Kind of Mines.	1901.		1902.	
	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.
Coal and shale ...	17	1·37	105	8·01
Gold { alluvial ...	6	1·11	4	·74
{ quartz ...	5	·75	1	·19
Silver and lead ..	23	3·65	12	2·23
Other mines... ..	4	·69	2	·44
Total ... ..	55	1·50	124	3·68

TABLE 299.

DEATHS from ACCIDENTS at COAL and SHALE MINES during the Years 1901 and 1902.‡

Year.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
1901 ... ..	16	1	17	1·63	·38	1·37
1902 ... ..	102	3	105	9·95	1·05	8·01

\* As the bulk of the silver is exported in the form of silver-lead, the quantity of fine silver contained therein can only be an approximation. It is stated in the Report of the Department of Mines (p. 42) that 6,165,226 oss. or 191,760 kilos. of silver were won at the Broken Hill mines during the year 1902.

† Annual Report of the Department of Mines for 1901, pp. 4 and 77, and 1902, pp. 5, 66, and 67.

‡ " " for 1901, pp. 98 and 103, and for 1902, pp. 91 and 92.



AUSTRALIA.—NEW SOUTH WALES—*continued.*

The heavy death-rate from accidents is mainly due to a serious explosion at Mount Kembla Colliery\* on the 31st July, 1902, by which 95 persons lost their lives. The explosion was started by the ignition of fire-damp at the naked lights in use in the mine, and it was propagated through the workings by the coal dust present upon the timber, sides, and floor. The old story of British explosions was repeated: most of the deaths were due to the inhalation of carbon monoxide contained in the after-damp, whilst comparatively few of the victims lost their lives from violence and burns.

The following table (No. 300) shows that the improvement in the cases of lead poisoning at the Broken Hill Mines, which took place during the five years ended 1901, has not been maintained. In 1902 as many as 56 cases were reported, for which apparently no satisfactory reason can be ascribed, as the conditions in the mines are virtually the same: the inspector, however, reports that the miners are as loth to use the bathing conveniences as they were in past years.

TABLE 300.

## BROKEN HILL MINES.†

Year.	Number of Persons Employed.	Cases of Lead Poisoning Reported.	Percentage of Persons Affected.
1896	5,400	44	·81
1897	6,473	17	·26
1898	6,842	14	·20
1899	7,252	13	·18
1900	7,405	5	·07
1901	6,989	13	·19
1902	4,983	56	1·12

## QUEENSLAND.‡

Apart from gold the mineral output of this state is comparatively of little importance at the present time.

*Gold.*—The yield of 1902, although less than that of 1900, is nevertheless the largest from stone actually raised and reduced during any one year. In 1900 the output was swollen by the addition of bullion recovered from the heaps of old tailings which are now fast disappearing.

Charters Towers ranks first as the most productive field in Queensland, and Mount Morgan comes next in importance.

*Tin Ore.*—The increase in the output and value of this ore more than counterbalances the decrease in copper ore.

*Manganese Ore.*—There is a marked increase in the output of this mineral in 1902. The whole of the supply is used in the state by the Mount Morgan Company.

\* *Annual Report of the Department of Mines for 1902*, pp. 92 and 98.

† " " " " 1901, p. 78, and for 1902, p. 68.

‡ " " " " *Under-Secretary for Mines for 1902*. Brisbane, 1903.

AUSTRALIA.—QUEENSLAND—continued.

TABLE 301.

PERSONS EMPLOYED at MINES during the Years 1901 and 1902.\*

	Kind of Mines.				1901.	1902.
	Coal        ...        ...        ...        ...				1,266	1,336
	Gold	{	alluvial	...        ...        ...	2,098†	1,916‡
			vein	...        ...        ...	7,340	7,129
	Other mines        ...        ...        ...				2,649	2,561
Total        ...        ...        ...				13,353	12,942	

TABLE 302.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.§

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Bismuth ore ... ..	20	20	3,684	1	1	123
Bismuth, Wolfram, and Molybdenite.	26	26	1,609	41	42	5,502
Coal ... ..	539,472	548,129	189,877	501,531	509,579	172,286
Copper ... ..	3,061	3,110	194,227	3,784	3,845	189,200
Gems, other than Opal ... ..	—	—	6,000	—	—	5,000
Gold (crude) ... ..	oss. 835,553¶	kilos. 25,988	2,541,892	oss. 860,453¶	kilos. 26,763	2,720,639
Iron ore ... ..	430	437	215	—	—	—
Lead ... ..	561	570	6,993	267	271	2,706
Manganese ore ... ..	218	221	795	4,600	4,674	16,989
Opal ... ..	—	—	7,400	—	—	7,000
Silver ... ..	oss. 571,561	kilos. 17,778	62,241	oss. 701,312	kilos. 21,813	70,145
Stone** :—						
Bluestone ... ..	94,807	96,328	12,386	79,144	80,414	9,601
Granite ... ..	4,000	4,064	1,100	2,770	2,814	1,095
Limestone ... ..	5,136	5,218	4,242	8,803	8,436	2,172
Porphyry ... ..	18,728	19,029	2,808	26,713	27,142	3,262
Sandstone ... ..	26,730	27,159	7,890	20,208	20,532	6,302
Volcanic Ash ... ..	87,920	89,331	6,960	47,605	48,369	3,768
Tin ore (dressed) ... ..	1,661	1,668	93,723	2,085	2,118	116,171
Wolfram ... ..	73	73	1,145	55	56	1,167
Total value ... ..	—	—	3,145,182	—	—	3,333,128

\* Annual Report of the Under Secretary for Mines for the year 1902, Brisbane, 1903, p. 27.  
† Including 465 Chinese.  
‡ 560  
§ Op. cit., pp. 22 and 26.  
¶ Fine gold 598,382 oss., or 18,612 kilos. These figures include some gold from ores received from other States of the Commonwealth.  
¶ Fine gold 640,463 oss., or 19,921 kilos. These figures include some gold from ores received from other States of the Commonwealth.  
\*\* Statistics of Queensland for 1902, Brisbane, 1903.



AUSTRALIA.—QUEENSLAND—*continued.*

TABLE 303.

DEATHS from ACCIDENTS at MINES during the Years 1901 and 1902.\*

Kind of Mines.	1901.		1902.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal ... ..	1	·79	1	·75
Gold ... ..	16	1·62	13	1·44
Other mines ...	4	1·51	3	1·17
Total ... ..	21	1·57	17	1·31

The following measures more or less directly relating to mining were passed during 1902†:—

“The Glasgow Gympie United Gold Mining Lease Act, 1902.”

“The Mining Act Amendment Act, 1902,” which extends the Authority of Drainage Boards.

“The Land Act, 1902” (Section 12), provides that leases shall be granted with a right to resume any land for the purpose of a gold field or mineral field, and with reservations in favour of the Crown of all minerals.

“The Local Authorities Act, 1902” (Section 195), alters the mode of making valuations of gold mining leases.

## SOUTH AUSTRALIA.‡

There are no records in the Mines Department affording information as to the number of deaths from accidents in South Australia proper, which, however, is known to be very small. It is estimated that during the year 1902 6,050 persons were engaged in mining in that division of the Colony, and principally for copper and gold. Of the 1,300 persons engaged in mining in the Northern Territory, 94 per cent. were Chinese.

*Copper.*—Copper ore is by far the most important mineral of this Colony. It is obtained chiefly from mines in Yorke's Peninsula in South Australia proper.

*Gold.*—Compared with that of the other Australian Colonies, the output of gold is at present insignificant. Most of it comes from the Northern Territory.

TABLE 304.

PERSONS EMPLOYED at MINES during the Years 1901 and 1902.

	Average Number of Persons Employed in and about the Mines during the years	
	1901.	1902.
South Australia proper ... ..	5,750§	6,050§
Northern Territory... ..	1,257	1,300
Total ... ..	7,007	7,350

It is estimated that 300 persons were employed at quarries in 1902.

\* *Annual Report of the Under Secretary for Mines for the year 1902*, Brisbane, 1903. pp. 123 and 127.

† *Op. cit.* pp. 20 and 21.

‡ *Official Return furnished by Department of Mines, Adelaide, and Government Resident's Report on the Northern Territory for the year 1902.*

§ Approximate.



## AUSTRALIA.—SOUTH AUSTRALIA—continued.

TABLE 305.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Copper ... .. (exported)	6,770	6,879	468,606	6,847	6,957	388,162
Copper ore ... .. "	2,348	2,386	31,471	2,721*	2,763	44,363
Gold ... ..	ozs. 27,490	kilos. 746	93,185	ozs. 28,212*	kilos. 877	95,129*
Gold ore and concentrates ...	5	5	175	—	—	—
Iron ore ... ..	—	—	—	100,000	101,605	70,000
Lead ... .. (exported)	(Not stated)	—	722	1,675	1,702	22,303
Manganese ore ... .. "	132	134	330	18	18	62
Salt ... ..	43,000	43,344	47,873	41,500	42,166	51,875
Silver lead ore... (exported)	1,514†	1,538	12,067	2,679	2,723	19,740
Tin ore ... ..	82	83	5,583	127*	129	1,906
Wolfram ... ..	5	5	(Not stated)	—	—	—
Unenumerated ore ... ..	—	—	1,753	—	—	251
Total value ... ..	—	—	661,765	—	—	693,791

## TASMANIA†.

Tasmania is producing a little coal, but its importance at the present moment as a mineral country is due to its great deposits of the ores of copper, lead, gold, silver, and tin.

The Official Handbook of Tasmania contains§ a useful map showing the principal mineral districts.

*Coal.*—The output is at present insignificant. The Cornwall and Mount Nicholas collieries are the largest producers in the State.

*Copper.*—Mount Lyell Mine in the West Coast district is the great producer of copper, and the ore is made specially valuable by containing gold and silver. The Mount Lyell ore yielded 6,213 tons of blister copper in the year 1902–1903.

*Gold.*—In addition to the deposits of auriferous copper ore of Mount Lyell and its neighbours, there are numerous veins of gold-bearing quartz.

*Lead and Silver.*—The Zeehan district boasts of many rich deposits of silver-bearing lead ore, and Tasmania is now producing nearly twice as much lead ore as the United Kingdom.

*Tin.*—As in the case of its competitor Cornwall, it was tin ore which first drew special attention to the mineral wealth of the country. For many years tin was the principal mineral export of Tasmania; though still an important product, its value is now exceeded by that of the gold. Mount Bischoff continues to be one of the largest tin mines in the world, its output during the year ended June, 1903, was between 1,200 and 1,300 tons.

\* Including output of Northern Territory.

† Estimated to contain 6,500 ozs. of fine silver.

‡ Report of the Secretary for Mines, 1902–1903, Hobart, 1903; and Ministerial Statement of the Minister of Lands Works, Mines, and Railways, 1902. Hobart, 1902.

§ Launceston, 1899.



## AUSTRALIA.—TASMANIA—continued.

TABLE 306.

PERSONS EMPLOYED at the MINES during the Years ended 31st December 1901 and 1902.

	1901.	1902.
	6,923	5,934

TABLE 307.

QUANTITY and VALUE of the MINERALS produced during the Years ended 31st December 1901 and 1902.

Description of Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asbestos ... ..	46	47	45	—	—	—
Coal ... ..	45,438	46,167	38,451	48,863	49,647	41,533
Copper (blister) ... ..	9,981	10,141	879,625	7,745	7,869	462,151*
„ ore ... ..	11,221	11,401	130,412	5,994	6,090	65,270
Gold (Fine) ... ..	ozs. 69,491	kilos. 2,161	295,176	ozs. 70,996	kilos. 2,208	301,573
Iron ore ... ..	612	622	417	2,386	2,424	1,075
Silver lead ore ... ..	28,774	29,236	207,228	46,480	47,226	218,864
Tin (exported) ... ..	1,789	1,818	212,542	1,958	1,989	237,828
Total value ... ..	—	—	1,763,896	—	—	1,328,294

TABLE 308.

DEATHS from ACCIDENTS at MINES during the Years ended 31st December 1901 and 1902.

	1901.		1902.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
	7	1·01	5	·84

\* Value of the gold contained in the blister copper has been deducted.

AUSTRALIA--continued.
VICTORIA.\*

*Coal.*—Victoria possesses large deposits of brown coal of Tertiary age. Up to the present time they have been little utilised. The output for 1902 shows an increase of 15,835 tons, compared with that of the previous year.

*Gold.*—The State with a yield of 720,866 ozs. of fine gold in 1902, stands second among the Australian Colonies as a gold producer. It is true that the weight of its bar gold was less than that of Queensland; but it has already been pointed out that much of the gold from the latter colony has a comparatively low standard of fineness, so that when its output is reduced to fine gold it falls behind Victoria.

TABLE 309.
PERSONS EMPLOYED at MINES during the Years 1901 and 1902.

		1901.	1902.
Coal ... ..		827	1,303
Gold ... ..		27,777	26,103
Other Mines ... ..		66	73
Total ... ..		28,670	27,479

TABLE 310.
QUANTITY and VALUE of the MINERALS produced during the Years 1901 and 1902.

Mineral.	1901			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Brown coal ... ..	150	152	37	—	—	—
Building stone ... ..	—	—	45,000	—	—	47,000
Clays ... ..	—	—	11,500	—	—	13,000
Coal ... ..	209,329	212,658	147,191	225,164	228,777	155,850
Gold ... ..	ozs. 789,562	kilos. 24,558	3,102,753	ozs. 777,738	kilos. 24,190	3,062,028
Gypsum ... ..	—	—	—	3,227	3,279	3,630
Infusorial earth ... ..	300	305	1,500	400	406	2,000
Silver ... ..	—	—	—	ozs. 47,683	kilos. 1,483	4,900
Tin ore ... ..	77	78	4,181	10	10	500
Total value ... ..	—	—	3,312,162	—	—	3,288,908

\* Annual Reports of the Secretary for Mines for Victoria for 1901 and 1902, Melbourne 1902 and 1903.



AUSTRALIA.—VICTORIA—*continued.*

TABLE 311.

DEATHS from ACCIDENTS at MINES during the Years 1901 and 1902.

Kind of Mines.	1901.		1902.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal ... ..	4	4·84	1	1·77
Gold ... ..	28	1·01	33	1·26
Total ... ..	32	1·12	34	1·24

## WESTERN AUSTRALIA.\*

A map of the State, prepared by Mr. Maitland, the Government Geologist, and pre-facing the Report of the Department of Mines, shows by coloured signs the distribution of the various useful minerals which have been discovered, viz.:—Antimony, asbestos, coal, cobalt, copper, diamonds, gold, graphite, iron, lead, mica, silver, and tin.

*Coal.*—The output of the only coalfield, that at Collie, was 140,884 tons in 1902, an increase of 23,000 tons compared with 1901.

*Copper Ore.*—The quantity produced during the year 1902 was only 2,262 tons, or 7,698 tons less than the preceding year. The decrease is accounted for by the fact that the smelting furnaces at the Anaconda Mine on the Mount Margaret Goldfield were closed down during the greater part of the year. The supply was furnished solely by the Mount Malcolm district and the Phillips River Goldfield. It is anticipated that the output for 1903 will be largely increased, as much development work has been going on.

*Gold.*—The output of gold has increased by 9·8 per cent. More than half the gold was produced by the East Coolgardie Field, with a total output of 1,118,616 ozs.; next in importance comes the Mount Margaret Field with 211,309 ozs., closely followed by the Murchison Field with an output of 210,814 ozs. The North Coolgardie Goldfields produced 185,016 ozs.

*Tin Ore.*—The value of the output for the year is practically the same as in 1901, the two producing districts being Greenbushes and Pilbarra.

TABLE 312.

PERSONS EMPLOYED at MINES, ALLUVIAL GOLD, and STREAM TIN WORKINGS during the Years 1901 and 1902.

Kind of Mines.	1901.			1902.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	279	104	383	284	84	368
Copper Ore ... ..	149	172	321	60	53	113
Gold	8,625	8,130	16,755	9,390	8,435	17,825
		3,016	3,016		2,651	2,651
Lead Ore ... ..	—	2	2	—	2	2
Limestone ... ..	—	5	5	—	2	2
Tin ... ..	66	347†	413	59	190	249
Total ... ..	9,119	11,776	20,895	9,793	11,417	21,210

\* Reports of the Department of Mines of Western Australia for the Years 1901 and 1902. Perth, 1902 and 1903.

† 249 of these persons were employed at Stream Tin Workings.

AUSTRALIA.—WESTERN AUSTRALIA—continued.

TABLE 313.

QUANTITY and VALUE of the MINERALS produced during the Years 1901 and 1902.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Coal ... ..	117,836	118,727	£ 68,561	140,884	143,145	86,188
Cobalt ore (exported) ...	—	—	—	2	2	41
Copper ore ... ..	9,960*	10,120	69,900*	2,262	2,298	8,090
Gems (exported) ... ..	—	—	1,000	—	—	—
Gold (fine) ... ..	ozs. 1,879,391	kilos. 58,458	7,235,653	ozs. 1,871,037	kilos. 58,196	7,947,662
Ironstone for fluxing ...	20,569	20,899	13,246	4,800	4,877	2,040
Limestone ... ..	18,210	18,502	4,348	5,080	5,162	1,340
Plumbago ore (exported) ...	—	—	—	1	1	6
Salt ... ..	†	—	—	†	—	—
Silver (exported) ... ..	ozs. 60,869	kilos. 1,893	7,609	ozs. 83,293	kilos. 2,591	9,190
Silver lead ore ... ..	21*	21*	152*	36	37	277
Tin ore (dressed) ... ..	734	748	40,000	620	630	39,783
Total value ... ..	—	—	7,440,469*	—	—	8,094,617

TABLE 314.

DEATHS from ACCIDENTS at MINES during the Years 1901 and 1902.

Kind of Mines.	1901.						1902.					
	Number of Persons Killed.			Death-rate per 1,000 Persons Employed.			Number of Persons Killed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	—	—	—	—	—	—	—	—	—	—	—	—
Gold ... ..	42	3	45	4·87	·37‡	2·69	30	9	39	3·19	1·07‡	2·19
Other mines ... ..	—	—	—	—	—	—	—	—	—	—	—	—
Total for all mines	42	3	45	4·61	·34‡	2·52	30	9	39	3·06	1·03‡	2·10

\* Revised figures.  
† Information not received.  
‡ Exclusive of alluvial gold workers.

Basutoland

According to Sir Godfrey Lagden,\* “Coal crops out in several places in Basutoland and is used for local consumption. . . . There are indications of iron, copper, and tin.”

Bechuanaland Protectorate.†

Little is known about the mineral wealth of this country ; though a small seam of good coal has been discovered close to the railway in the Northern Protectorate.

British Borneo.

LABUAN.‡

The Labuan Coalfields Company, Ltd., which purchased the Labuan Coalfields at the end of the year 1902, are now engaged in extensively developing a seam nine feet thick at Coal Point, and it is expected that the output for the island will in future be largely augmented.

During the last three or four years all the coal produced has been sold at Victoria Harbour, Labuan, for steamships calling there for bunker supplies. The average selling price of the coal during the year 1902 was 17s. 6d. per ton.

Between 400 and 500 natives are employed in the mines at Coal Point, and from 50 to 60 in coaling operations at Victoria.

The quantities of coal produced in 1901 and 1902 were as follows :—

TABLE 316.

	Year.	Quantity.		Value.
		Statute Tons.	Metric Tons.	£
	1901	21,194	21,534	Not stated.
	1902	16,642	16,909	14,562

NORTH BORNEO.§

The existence of coal, iron, manganese, gold, and other minerals has been proved ; gold has from time immemorial been worked by the natives in the vicinity of Darvel Bay. Coal has been discovered in Marudu Bay, and the coalfield in the vicinity of Cowie Harbour has been proved to contain two workable seams. One of them, which is six feet six inches thick, has been traced along its outcrop for a distance of six miles.

\* *Jour. R. Col. Inst.*, Vol. xxxii., 1901, p. 462.  
† Newton, “Bechuanaland Protectorate Annual Reports for 1896-7.” *Colonial Reports—Annual*, No. 226.—London, 1898 [C. 8650-24], p. 8.  
‡ Information furnished by the Labuan Coalfields Company, Ltd.  
§ Information furnished by the British North Borneo Company.



BRITISH BORNEO—*continued.*

## SARAWAK.\*

The known mineral resources of Sarawak are deposits of antimony ore, coal, diamonds, gold, and petroleum.

*Antimony.*—The Borneo Company has antimony works at Busoh in Upper Sarawak, but very little work is being done, only 12 $\frac{3}{4}$  tons being exported in 1902.

*Coal.*—The Government works two coal mines, one at Sadong, which produced 12,468 tons in 1902, and the other at Brooketon, which produced 20,810 tons in the same year.

*Diamonds.*—The gems are found in very small quantities.

*Gold.*—Gold is being extracted from quartz. The mills at Bau and Bidi, belonging to the Borneo Company, Ltd., are now (1902) crushing between them about 15,000 tons a month, and all the gold is extracted by the cyanide process. The total output of the Borneo Company for the year 1902 was about 32,000 ozs. of fine gold.

## British Central Africa Protectorate.†

Promising auriferous quartz reefs have been discovered near the Loangwa River.

## British Columbia. (See under CANADA.)

## British Guiana.‡

*Diamonds.*—The production of diamonds of good quality has continued throughout the year—163,680 stones, weighing 10,446 carats and valued at £20,892, were declared at the Department of Lands and Mines, Georgetown. The greater portion of these stones came from the Mazaruni River, and were obtained by primitive methods of washing. The Potaro River, with its tributary the Kuribrong, has also attracted attention, and a stone of five carats was found by one party while prospecting.

*Gold.*—The production for the year was 104,525 ozs. of alluvial gold, showing an increase of 3,192 ozs. on the previous year's production.

The hydraulic plant at Omai on the Essequibo River started operations in July, 1902, and up to the end of March, 1903, the quantity of gold (bullion) produced was 2,250 ozs. The yield per cubic yard was good, and an increased production is looked for during the coming year.

TABLE 317.

PERSONS EMPLOYED at MINES, ALLUVIAL WORKINGS, and QUARRIES during the Years 1901-1902 and 1902-1903.

Kind of Workings.					1901-1902.	1902-1903.
Mines and Alluvial or Placer Diggings	...				13,558 (a)	11,385 (a)
Granite Quarries	...	...	...	...	44	27

(a) Approximate figures, and relate to the number of men registered.

\* Consul Hewett, "Trade and Commerce of Sarawak for the Year 1902."—*Dipl. and Cons. Reports*, No. 3,096, Ann. Ser., 1903 [Cd. 1,766-30], and information furnished by the Borneo Company, Ltd.

† Commissioner Sharpe, "Trade and General Condition of British Central Africa Protectorate for the Year 1901-1902."—*Dipl. and Cons. Reports*, No. 2872, Ann. Ser., 1902 [Cd. 786-176], p. 16.

‡ Official Return furnished by the Department of Lands and Mines, Georgetown: *British Guiana, Report of the Commissioner of Mines for the year 1902-1903.* George Town, Demerara, 1903.

BRITISH GUIANA—continued.

TABLE 318.

QUANTITY and VALUE of the MINERALS produced in 1901-1902 and 1902-1903.

Mineral.	Financial Year 1901-1902.			Financial Year 1902-1903.		
	Quantity.		Value.	Quantity.		Value.
Diamonds ... ..	Carats. 8,227	—	£ 16,454	Carats. 10,446	—	£ 20,892
Gold ... ..	Ozs. 101,332	Kilos. 3,152	369,450	Ozs. 104,525	Kilos. 3,251	381,080
Granite ... ..	Statute Tons. 3,496	Metric Tons. 3,552	1,665	Statute Tons. 3,281	Metric Tons. 5,384	2,050
Total value ... ..	—	—	387,569	—	—	404,022

The table below shows the output of the principal districts :—

TABLE 319.

Gold obtained.

District.	Financial Year 1901-1902.	Financial Year 1902-1903.
	Ozs.	Ozs.
Barima ... ..	16,200	24,079
Barama ... ..	7,700	10,370
Cuyuni ... ..	22,457	21,802
Demarara ... ..	11	42
Essequebo ... ..	9,759	12,481
Groote Creek ... ..	2,558	1,649
Marzaruni ... ..	1,712	3,124
Potaro ... ..	25,403	20,991
Puruni ... ..	15,533	9,987
Total output in ozs. ...	101,333	104,525
„ „ kil. ...	3,152	3,251

TABLE 320.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1901-1902 and 1902-1903.

Kind of Workings.	1901-1902.		1902-1903.	
	Persons Killed.	Death-rate per 1,000 Persons employed.	Persons Killed.	Death-rate per 1,000 Persons employed.
Gold mines ... ..	6	.44	6	.53
Alluvial or Placer diggings ...				
Granite quarries ... ..	—	—	—	—



**British New Guinea.\***

There are several goldfields in the Possession, viz., Louisiade, Sudest Island, Gira, Yodda, Murua or Woodlark Island, Milne Bay, Cloudy Bay, and Musa River, which give employment to between 200 and 300 persons. The output of gold, judging by the Customs returns of the quantity exported, which do not show a complete record of all the gold that leaves the Possession, has considerably increased in 1901-2 compared with the preceding year.

TABLE 321.

	Year.	Gold exported.		Value.
		Ozs.	Kil.	£
	1900-1901	9,188	286	32,646
	1901-1902	11,881	370	42,214

**British Solomon Islands.†**

Copper ore is known to exist in the Island of Rendova, and a concession has been granted for working sulphur in the Island of Vella Lavella.

**Canada.‡**

*Asbestos.*—The Canadian asbestos, which mineralogically is chrysotile, occurs in considerable quantities in the form of small veins in intrusive serpentine, in the Eastern Townships of the province of Quebec, and at various points north of Ottawa in association with serpentinous rocks in the Laurentian formation.

*Chromic Iron Ore.*—This ore is obtained from irregular pockets in the intrusive serpentines of the Eastern Townships of the province of Quebec.

*Coal.*—The coalfields, which have been most largely developed, are situated on the seaboard of the Atlantic and Pacific Oceans, and are therefore of no small importance from an Imperial point of view. On the Atlantic side of the continent, bituminous coal is being mined from thick seams of true Carboniferous age at the Sydney (Cape Breton), Pictou, and Springhill coalfields, in Nova Scotia. New Brunswick has a small area of thin seams of bituminous coal. The coal of the Pacific coast, generally bituminous, is of Cretaceous age, and is derived from collieries at Nanaimo, Wellington, and Comox, in Vancouver Island. Anthracite and bituminous coal occur in Queen Charlotte Islands.

In the interior of the Dominion no coal is found between the Atlantic seaboard and the prairies of the West, where great quantities of lignite exist. At Lethbridge the seams are worked on a large scale. On approaching the Rocky Mountains, the seams occurring near Cochrane improve in quality, and yield bituminous coal. Further west again is the Cascade coalfield, in the vicinity of Banff, one of the well-known pleasure resorts of the Rocky Mountains, where the coal has become converted into semi-anthracite and anthracite.

Thick seams of good bituminous coal and semi-anthracite have long been known to exist in the vicinity of the Crow's Nest Pass, and this store of valuable fuel is now being worked on a large scale. All these coals are of Cretaceous age.

In 1902 Nova Scotia produced 71·8 per cent. of the Dominion's output of coal, British Columbia 21·3 per cent., and the North-West Territories, together with New Brunswick, 6·9 per cent.

\* *Annual Report on British New Guinea for 1901-1902.*

† Woodford, "British Solomon Islands Annual Report for 1901-1902." *Colonial Reports, Annual*, No. 372 [Cd. 788-42]. London, 1902, p. 16.

‡ *Reports of the Division of Mineral Statistics and Mines of Canada for the years 1900 and 1901.* Ottawa.



## CANADA—continued.

*Copper.*—Copper ore is mined in the provinces of British Columbia, Ontario, and Quebec, the first-named being by far the most important. Its output increased very largely in 1901 owing to the yield of the mines in the Kettle River, Grand Forks, and Osoyoos Mining Divisions, which lie upon the border of the United States. This "Boundary" district, as it is called, produced more than half the total output of the Province, which last year was reckoned to be 13,230 tons of fine copper.

In Ontario copper pyrites accompanies the nickeliferous pyrrhotite, which has made the Sudbury district so famous; large quantities of regulus containing copper and nickel are produced at the Sudbury smelting works and sent to the United States for the extraction of the two metals.

In the province of Quebec there are veins of cupreous iron pyrites containing a little silver, and they furnish an ore which is utilised in the manufacture of sulphuric acid before the valuable metals are extracted.

*Corundum.*—In the year 1897 large deposits of corundum were discovered near Raglan, in the counties of Peterborough, Hastings, and Renfrew, in Eastern Ontario; the mineral is now being worked on a large scale for the purpose of making corundum wheels, and Canada is becoming one of the greatest corundum-producing countries in the world.

*Gold.*—At the present time the chief gold-producing provinces of the Dominion are the Yukon region of the North-West Territories, British Columbia, Nova Scotia, and Ontario.

The Yukon region, with the great Klondike goldfield, produced about two-thirds of Canada's output; but the yield of 701,500 ozs. shows a falling off of 19·4 per cent. compared with that of the previous year.

Next in importance is British Columbia, with a yield of 290,148 ozs. of gold in 1902, of which 53,657 ozs. were obtained from alluvial deposits and 236,491 ozs. from lodes. The most important alluvial or placer district is Cariboo, which was famous even so long ago as 1859. Most of the lode gold is extracted by smelting auriferous copper ores in the Rossland, Nelson, and "Boundary" districts, and some by amalgamation and concentration.

The gold of Nova Scotia is derived from free-milling quartz veins, and it is encouraging to note that the production of the province is increasing.

Ontario is not yet producing a large quantity of gold, though the labours of prospectors have proved the existence of auriferous veins over a considerable extent of country from the extreme west of the province in the vicinity of the Lake of the Woods, through Rainy Lake, Seine River, Manitou Lake, Wahnapiatae Lake, to the Marmora district in the east. The output from various stamp mills affords good grounds for believing that gold mining will become an important industry in Ontario.

*Granite and Miscellaneous Building Stones.*—Building stones, such as granite, limestones, marble, and sandstone abound in the Dominion, and it is only the lack of a sufficient market which prevents their being worked on a larger scale.

*Graphite.*—This mineral is obtained in the provinces of New Brunswick, Ontario, and Quebec from crystalline limestone in the Laurentian rocks. The greater part of the graphite raised in 1902 came from Black Donald Mine, Renfrew County, Ontario.

*Gypsum.*—New Brunswick and Nova Scotia are remarkable for thick beds of gypsum, some of which occurs in the form of spotlessly white alabaster. A small amount of gypsum is being mined in Ontario.‡



*Iron Ore.*—Numerous iron ore deposits are known in Nova Scotia, but the output in 1902 amounted to little more than 3 per cent. of the quantity imported from Newfoundland. In Quebec the furnaces use bog ore produced in the province in admixture with ores brought from outside. In Ontario iron ore is obtained on a large scale from Helen Mine at Michipicoten on Lake Superior, and prospecting work is being carried on actively in many iron ore districts discovered during the last few years throughout the northern part of the province, known as New Ontario.

*Lead Ore.*—The mineral resources of British Columbia are by no means confined to gold. This province is a large producer of argentiferous lead ore, which is obtained especially in the East and West Kootenay districts. Owing to lower prices obtainable for the ore the output declined in 1902.

*Mercury.*—A little cinnabar was obtained in 1895, 1896, and 1897 from mines near Kamloops Lake, in British Columbia.

*Mica.*—This mineral is mined quite extensively in various places. The phlogopite and biotite varieties are obtained in the provinces of Ontario and Quebec, in the district about Ottawa, whilst transparent muscovite of excellent quality comes from Tête Jaune Cache, in British Columbia.

*Natural Gas.*—In Essex and Welland counties in the peninsula of Ontario, natural gas has been obtained by boring down to the Lower Silurian rocks. A great many holes have been put down and most of the gas obtained is piped to Buffalo and Detroit and adjacent points in the United States.

*Nickel.*—Canada can boast that it possesses rich and important deposits of nickel in the Sudbury district, where the metal occurs in pyrrhotite, more or less mixed with copper pyrites. The output of nickel in 1902 was about three times that of the year 1897.

*Ochre.*—The most important ochre deposits are near Three Rivers, Champlain County, Quebec.

*Petroleum.*—Rock oil is produced only in the peninsula of Ontario, where one chief pool and several of less extent have been proved. The crude oil is piped to refineries at Sarnia and Petrolea, Ontario.

*Phosphate of Lime.*—This mineral has been extensively worked from deposits in the Laurentian rocks, especially in the province of Quebec, north of Buckingham, and also to a less extent in the province of Ontario, north of Kingston. Owing to the competition of phosphates from the United States, prices have dropped, and practically none of the Canadian apatite mines are being worked as such. The phosphate appearing in the statistics was obtained as a by-product in mining for mica, or from the old waste heaps of abandoned workings.

*Platinum.*—A small quantity of platinum was produced in the Similkameen district from placer workings. In the form of sperrylite it occurs also in association with the chalcopyrite of the Sudbury nickel deposits.

*Salt.*—Thick beds of salt occur in Southern Ontario, in the Onondaga division of the Silurian rocks. The brine is pumped up and evaporated.

*Silver.*—The lead ores of British Columbia are often highly argentiferous.

The rich silver ores in the Thunder Bay district of the province of Ontario are not being largely worked at the present time.

*Slate.*—A small amount of slate is obtained from the Cambrian rocks, in the province of Quebec.



## CANADA—continued.

*Copper.*—Copper ore is mined in the provinces of British Columbia, Ontario, and Quebec, the first-named being by far the most important. Its output increased very largely in 1901 owing to the yield of the mines in the Kettle River, Grand Forks, and Osoyoos Mining Divisions, which lie upon the border of the United States. This "Boundary" district, as it is called, produced more than half the total output of the Province, which last year was reckoned to be 13,230 tons of fine copper.

In Ontario copper pyrites accompanies the nickeliferous pyrrhotite, which has made the Sudbury district so famous; large quantities of regulus containing copper and nickel are produced at the Sudbury smelting works and sent to the United States for the extraction of the two metals.

In the province of Quebec there are veins of cupreous iron pyrites containing a little silver, and they furnish an ore which is utilised in the manufacture of sulphuric acid before the valuable metals are extracted.

*Corundum.*—In the year 1897 large deposits of corundum were discovered near Raglan, in the counties of Peterborough, Hastings, and Renfrew, in Eastern Ontario; the mineral is now being worked on a large scale for the purpose of making corundum wheels, and Canada is becoming one of the greatest corundum-producing countries in the world.

*Gold.*—At the present time the chief gold-producing provinces of the Dominion are the Yukon region of the North-West Territories, British Columbia, Nova Scotia, and Ontario.

The Yukon region, with the great Klondike goldfield, produced about two-thirds of Canada's output; but the yield of 701,500 ozs. shows a falling off of 19·4 per cent. compared with that of the previous year.

Next in importance is British Columbia, with a yield of 290,148 ozs. of gold in 1902, of which 53,657 ozs. were obtained from alluvial deposits and 236,491 ozs. from lodes. The most important alluvial or placer district is Cariboo, which was famous even so long ago as 1859. Most of the lode gold is extracted by smelting auriferous copper ores in the Rossland, Nelson, and "Boundary" districts, and some by amalgamation and concentration.

The gold of Nova Scotia is derived from free-milling quartz veins, and it is encouraging to note that the production of the province is increasing.

Ontario is not yet producing a large quantity of gold, though the labours of prospectors have proved the existence of auriferous veins over a considerable extent of country from the extreme west of the province in the vicinity of the Lake of the Woods, through Rainy Lake, Seine River, Manitou Lake, Wahnapiatae Lake, to the Marmora district in the east. The output from various stamp mills affords good grounds for believing that gold mining will become an important industry in Ontario.

*Granite and Miscellaneous Building Stones.*—Building stones, such as granite, limestones, marble, and sandstone abound in the Dominion, and it is only the lack of a sufficient market which prevents their being worked on a larger scale.

*Graphite.*—This mineral is obtained in the provinces of New Brunswick, Ontario, and Quebec from crystalline limestone in the Laurentian rocks. The greater part of the graphite raised in 1902 came from Black Donald Mine, Renfrew County, Ontario.

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## CANADA—continued.

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## CANADA—continued.

TABLE 322.

QUANTITY and VALUE of MINERALS produced in the DOMINION of CANADA during the Years 1901 and 1902.\*

Mineral or other product.	1901.†			1902.‡		
	Quantity.	Market Value, less Charges of Transport from Place of Production.		Quantity.	Market Value, less Charges of Transport from Place of Production.	
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Actinolite ...	465	472	642	491	499	904
Arsenic ...	620	630	8,564	714	725	9,868
Asbestos ...	35,908	36,484	258,855	36,108	36,687	247,285
Baryta ...	583	592	789	979	995	813
Coal ...	5,560,136	5,649,363	2,466,897	6,820,763	6,930,220	3,192,866
Coke ...	326,367	331,604	252,375	452,202	459,459	316,219
Copper (fine, contained in ore).	16,887	17,158	1,252,722	17,486	17,767	935,691
Corundum ...	396	402	10,914	686	697	17,356
Felspar ...	4,777	4,854	2,989	6,764	6,873	2,337
Fireclay ...	3,553	3,610	1,216	2,447	2,486	880
Flagstones ...	—	—	940	—	—	—
Gold (fine) ...	ozs. 1,167,320	kil. 36,308	4,957,912	ozs. 1,003,292§	kil. 31,206	4,261,900
Granite ...	—	—	31,849	—	—	34,932
Graphite ...	1,973	2,005	7,968	978	994	5,815
Gravel and Sand ...	176,162	178,989	24,137	142,672	144,962	24,477
Grindstones ...	4,090	4,156	9,383	5,499	5,587	9,945
Gypsum ...	262,321	266,531	69,893	296,468	301,267	73,216
Iron ore ...	273,392	277,779	166,634	382,947	389,092	218,840
" chromic ...	1,137	1,155	3,441	804	817	2,548
Iron (pig) ...	74,196	75,387	249,064	63,987	65,014	214,317
Lead ...	23,170	23,542	462,208	10,268	10,433	192,302
Limestone for flux in smelting iron ore.	151,249	153,676	37,686	261,704	265,904	44,961
Manganese ore ...	393	399	990	75	76	570
Mica ...	—	—	32,877	—	—	82,192
Mineral water ...	—	—	20,548	—	—	20,548
Natural gas ...	—	—	69,755	—	—	40,272
Nickel ...	4,102	4,168	944,080	4,774	4,851	1,032,720
Ochres ...	1,994	2,020	3,439	4,424	4,495	6,266
Peat ...	196	199	136	424	431	342
Petroleum ...	galls. 21,783,720	litres 98,973,417	207,180	galls. 18,251,975	litres 82,927,082	192,070
Phosphate of lime ...	922	937	1,290	764	776	1,018
Platinum ...	—	—	94	—	—	—
Pyrites (Copper and Iron).	31,482	31,987	26,824	31,800	32,310	28,549
Salt ...	53,061	53,913	53,903	56,300	57,203	59,297
Sand (moulding) ...	13,129	13,340	6,043	11,921	12,112	5,682
Silver (fine) ...	ozs. 5,539,192	kilos. 172,288	670,963	ozs. 4,373,000	kilos. 136,015	468,690
Slate ...	638	648	2,051	—	—	3,945
Talc ...	231	235	179	615	625	371
Tripolite ...	—	—	—	804	817	3,247
Zinc ...	—	—	—	74	75	1,658
Building materials :—						
Bricks ...	—	—	—	—	—	—
Building stone ...	—	—	—	—	—	—
Cement, natural ...	—	—	—	—	—	—
" Portland ...	—	—	—	—	—	—
Lime ...	—	—	1,339,072	—	—	1,533,606
Pottery ...	—	—	—	—	—	—
Sewer pipe ...	—	—	—	—	—	—
Terra cotta ...	—	—	—	—	—	—
Tiles ...	—	—	—	—	—	—
Total value ...	—	—	13,646,446	—	—	13,288,510

The progress of Canada as a mineral-producing country still continues, although the total value of its metallic and non-metallic products in 1902, which exceeded 13 millions sterling, shows a falling off of 2·6 per cent. compared with the previous year.

In 1902 gold contributed 31·92 per cent. of the total value ; coal, 23·92 per cent. ; copper, 7·01 per cent. ; nickel, 7·74 per cent. ; silver, 3·51 per cent.

The mining industries of some of the provinces of the Dominion are sufficiently important to deserve separate tables.

\* Reports of the Division of Mineral Statistics and Mines of Canada for the years 1901 and 1902. Ottawa.

† Revised figures.

‡ Preliminary Return, subject to revision.

§ Estimated on the value of 1 oz. of gold being worth £4 4s. 11½d.

|| Quantity exported.



## CANADA—continued.

## BRITISH COLUMBIA.\*

TABLE 323.

PERSONS EMPLOYED at MINES during the Years 1901 and 1902.

KIND OF MINES.	1901.			1902.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	3,041	933	3,974	3,101	910	4,011
Metal- { Shipping ...	2,736	1,212	3,948	2,219	1,126	3,345
liferous { Non-shipping†	227	147	374	184	158	342
Total ... ..	6,004	2,292	8,296	5,504	2,194	7,698

TABLE 324.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal ... ..	1,460,331	1,483,766	900,204	1,397,394	1,419,819	861,407
Coke ... ..	127,081	129,120	180,563	128,015	130,069	181,522
Copper ... ..	12,323	12,521	918,760	18,239	18,442	708,221
Gold, Alluvial... ..	ozs. 48,505	kilos. 1,509	199,336	ozs. 53,657	kilos. 1,669	220,508
“ from veins, &c. ...	ozs. 210,384	kilos. 6,544	893,549	ozs. 236,491	kilos. 7,356	1,004,439
Lead ... ..	23,028	23,398	411,521	10,061	10,222	169,486
Silver ... ..	ozs. 5,151,333	kilos. 160,225	592,756	ozs. 3,917,917	kilos. 121,861	398,903
Other minerals ... ..	—	—	85,734	—	—	98,641
Total value ... ..	—	—	4,127,423	—	—	3,593,127

TABLE 325.

DEATHS from ACCIDENTS at COAL MINES during the Years 1901 and 1902.

Cause of Accident.				No. of Persons Killed.	
				1901.	1902.
<i>Underground:</i>					
Falls of coal ... ..				6	1
“ rock ... ..				6	7
Explosion of gas ... ..				66	126
Crushed by cars ... ..				3	3
Blasting ... ..				—	—
Hoisting, ropes, &c....				—	—
Fire ... ..				19	—
Struck by posts ... ..				—	2
<i>Surface:</i>					
Railways ... ..				—	—
Miscellaneous ... ..				2	—
Total ... ..				102	139

\* Annual Reports of the Minister of Mines for British Columbia for 1901 and 1902. Victoria.

† The statistics of Mines not shipping ores are very incomplete.



CANADA.—BRITISH COLUMBIA—*continued.*

During the year 1902 there were 13 fatal accidents, the same number as in 1901, at metalliferous mines, causing 13 deaths.

TABLE 326.

DEATH-RATE FROM ACCIDENTS at MINES during the Years 1901 and 1902.

KIND OF MINES.	1901.			1902.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	32.88	2.15	25.67	44.82	—	34.65
Metalliferous ...	—	—	3.55*	—	—	3.59*

The high mortality rate of 1901 has been exceeded in 1902, owing to a terrible explosion in No. 2 Mine of Coal Creek Colliery or Fernie Mines, which resulted in 125 deaths.

A special Commission was appointed on the 7th August, 1902, to inquire into the causes of explosions in Coal Mines, and the Report of the Commissioners is embodied in the Annual Report of the Minister of Mines for 1902.† Amongst various recommendations are the following:—the copious watering of working places and roadways, where necessary; only explosives similar to those on the permitted list in Great Britain to be used, except in mines naturally wet and free from firedamp; Government inspection of all explosives used in coal mines; the exclusion of all workmen from the mines who cannot understand orders and instructions given in the English language.

## NOVA SCOTIA.‡

TABLE 327.

PERSONS EMPLOYED at COAL MINES during the Years ended 30th September 1901 and 1902.

Year.	Under-ground.			Above-ground.			Construction.			Total.
	Men.	Boys.	Total.	Men.	Boys.	Total.	Men.	Boys.	Total.	
1901 ... ..	5,064	580	5,644	1,750	212	1,962	57	—	57	7,663
1902 ... ..	5,226	619	5,845	1,784	201	1,985	231	1	232	8,062

The average numbers of persons employed at gold mines during the years ending 30th September 1901 and 1902 were 888 and 761 respectively.

TABLE 328.

QUANTITY of MINERALS produced during the Years ended 30th September 1901 and 1902.

Mineral.	Year ended 30th September 1901.		Year ended 30th September 1902.	
	Quantity.		Quantity.	
	Statute Tons.	Metric Tons.	Statute Tons.	Metric Tons.
Barytes ... ..	600	610	742	754
Coal ... ..	3,625,365	3,683,543	4,366,869	4,436,947
Coke ... ..	120,000	121,926	406,152	412,670
Gold ... ..	ozs. 30,537	kilos. 950	ozs. 28,279	kilos. 880
Grindstones ... ..	315	320	4,000	4,064
Gypsum (exported) ... ..	135,637	137,814	173,000	175,776
Iron ore ... ..	16,071	16,329	15,214	15,458
Limestone ... ..	95,794	97,331	223,606	227,194
Manganese ore ... ..	10	10	150	152
Sand, moulding ... ..	—	—	1,390	1,412
Tripoli and Silica ... ..	714	725	—	—

\* Calculated on the number of persons employed at mines shipping ore.

† Victoria, British Columbia, 1903, pp. 286-295.

‡ Reports of the Department of Mines for Nova Scotia for 1901 and 1902, Halifax.



## CANADA.—NOVA SCOTIA—continued.

TABLE 329.

DEATHS from ACCIDENTS at MINES during the Years ended 30th September 1901 and 1902.

Year.	Kind of Mines.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
1901 ...	Coal ... ..	14	1·83
	Gold ... ..	1	1·13
1902 ...	Coal ... ..	19	2·36
	Gold ... ..	1	1·31

## ONTARIO.\*

TABLE 330.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1901 and 1902.

Kind of Working.	1901.	1902.
Copper and nickel ... ..	2,284	1,731
Gold and arsenic ... ..	585	726
Iron ore ... ..	360	388
Mica ... ..	83	110
Silver ... ..	65	50
Other workings ... ..	8,458	8,769
Total ... ..	11,835	11,774

TABLE 331.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.

Mineral or other Product.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Actinolite ... ..	465	472	642	714	725	1,264
Arsenic... ..	620	630	8,564	714	725	9,863
Calcium carbide ... ..	2,474	2,514	34,683	1,252	1,272	18,374
Corundum ... ..	477	485	10,914	1,015	1,031	17,234
Copper ... ..	4,051	4,116	121,044	4,339	4,409	139,784
Felspar ... ..	4,554	4,627	1,310	7,836	7,962	2,646
Gold ... ..	ozs. 14,293	kilos. 445	50,228	ozs. 13,625	kilos. 424	47,225
Graphite ... ..	893	907	4,110	1,717	1,745	3,672
Gypsum ... ..	1,387	1,409	2,753	1,712	1,739	3,935
Iron ore ... ..	244,230	248,149	35,841	320,793	325,941	106,530
Iron pyrites ... ..	6,250	6,350	3,596	3,903	3,966	3,081
Lime ... ..	bushels 4,100,000	decalitres 14,902,541	113,014	bushels 4,300,000	decalitres 15,629,494	126,781
Mica ... ..	382	388	8,174	892	906	21,062
Molybdenite ... ..	—	—	—	3	3	82
Natural gas ... ..	—	—	70,312	—	—	40,939
Nickel ... ..	3,965	4,029	382,186	5,308	5,393	454,307
Petroleum (crude) ... ..	galls. 21,433,500	litres 97,382,207	268,262	galls. 18,185,592	litres 82,625,473	266,910
Salt ... ..	53,863	54,727	66,382	55,367	56,256	70,812
Silver ... ..	ozs. 151,400	4,709	17,431	ozs. 96,666	kilos. 3,006	11,918
Talc ... ..	357	363	288	622	632	191
Zinc ore ... ..	1,339	1,360	3,082	848	862	2,363
Building materials:—						
Bricks, tiles, pipes, &c.	—	—	461,327	—	—	443,723
Building stone, &c.	—	—	174,658	—	—	209,589
Cement, Portland ... ..	barrels 350,660	—	115,737	barrels 522,899	—	188,265
" rock ... ..	" 133,628	—	22,115	" 77,300	—	10,437
Total value ... ..	—	—	1,976,653	—	—	2,200,987

\* Reports of the Bureau of Mines for Ontario for 1901 and 1902, Toronto.

CANADA.—ONTARIO—continued.

TABLE 332.  
NUMBER of DEATHS from ACCIDENTS at MINES during the Years 1901 and 1902.

Kind of Mine.	Number of Persons Killed.		Death-rate per 1,000 Persons Employed.	
	1901.	1902.	1901.	1902.
Copper ... ..	8	}	3.94	4.04
Nickel ... ..	1		—	—
Gold ... ..	—	—	—	—
Iron ... ..	3	3	8.33	7.73
Mica ... ..	1	—	12.05	—

QUEBEC.\*

This Province employed in 1902 about 5,000 persons in mining and quarrying, of whom nearly one-third were engaged in getting asbestos, the most important mineral.

TABLE 333.  
OUTPUT and VALUE of MINERALS during the Years 1901 and 1902.

Mineral.	1901			1902.		
	Statute Tons.	Metric Tons.	Value.	Statute Tons.	Metric Tons.	Value.
Asbestos .. ..	35,979	36,556	£ 263,924	36,070	36,649	£ 241,378
Barytes ... ..	476	484	611	315	320	508
Cement ... ..	barrels 8,000	—	5,758	barrels 36,000	—	12,534
Chrome iron ... ..	1,137	1,155	3,441	804	817	2,774
Copper ore ... ..	18,121	18,412	25,993	28,516	28,974	24,898
Felspar ... ..	375	381	261	46	47	35
Flagstones ... ..	sq. yds. 3,000	sq. metres 2,508	555	sq. yds. 3,000	sq. metres 2,508	524
Gold ... ..	ozs. 80	kilos. 2	296	ozs. 300	kilos. 9	1,110
Granite ... ..	—	—	30,000	—	—	32,877
Graphite ... ..	75	76	964	21	21	444
Iron ores ... ..	13,829	14,051	6,365	16,691	16,959	11,353
Lead ore ... ..	208	208	1,906	268	272	3,082
Mica ... ..	126	128	8,137	59	60	7,049
Ochre ... ..	1,119	1,137	2,999	1,388	1,410	3,735
Phosphate ... ..	922	937	1,290	787	800	1,110
Slate ... ..	squares 6,400	—	2,518	squares 4,800	—	3,945
Building materials...	—	—	20,871	—	—	266,096
Total value ... ..	—	—	375,884	—	—	613,452

There were two deaths from accidents at mines and quarries reported during the year 1902, these deaths are at the rate of .4 per thousand persons employed.

\* Obalski, *Reports on the Mines of the Province of Quebec for the years 1901 and 1902*, Department of Colonization and Mines, Quebec, 1902 and 1903.



## Cape Colony.\*

Though the diamond industry overshadows all other kinds of mining in the Colony, copper ore has long been a notable article of export.

*Asbestos*.—This mineral occurs in the form of narrow veins, from one to five inches wide, in a dark shale at Westerberg, in the Prieska district, and Koegas, in the Hay district.

*Coal*.—Outcrops of coal have been discovered at various points along the plateau lying between the Drakensberg range and the Matiwane Mountains, and along the southern slopes of those mountains, between the Kei and Umzimkulu rivers; the seams are mostly thin. As shown by Table 336, the total output of coal was 165,557 statute tons in 1902. Of this amount, Indwe produced 103,709 tons; the rest came from collieries at Cyphergat, Sterkstroom, Molteno, &c. The working of the coal mines was greatly impeded in 1902, owing to a scarcity of labour and other causes.

*Copper Ore*.—Namaqualand produces all the copper ore; apparently the copper mines are not under official inspection.

*Crocidolite*.—Small quantities of this mineral, which is used for ornaments and as a jewel, are obtained in the district of Hay and other places.

*Diamonds*.—The gems are obtained mainly from open and underground workings in the solid rock near Kimberley, and to a small extent from alluvial diggings. The three principal mines worked at the present time are De Beers, Kimberley, and Premier (Wesselton).

In addition to the Kimberley mines, there are a few unimportant diamond mines in the Barkly West Division, besides alluvial diggings.

*Gold*.—A small quantity of gold is obtained from Millwood in the Knysna division.

*Salt*.—Salt pans are found in 18 divisions of the Colony, the largest being in Kimberley, Port Elizabeth, Uitenhage, Malmesbury, Piquetberg, and Cradock.

TABLE 334.

PERSONS EMPLOYED† during the Years 1901 and 1902.

Class of Mine.	Under-ground.			Above-ground.			Total for 1902.			Total for 1901.
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.	
Coal ...	86	1,593	1,679	55	462	517	141	2,055	2,196	2,588
Copper Ore...	—	—	—	—	—	—	306	1,704	2,010	2,026
Diamond ...	357	2,814	3,171	1,750	7,135	8,885	2,107	9,949	12,056	11,230‡

\* Statistical Registers for 1901 and 1902, Cape Town, and Reports of the Inspector of Mines for Kimberley, &c., for 1901 and 1902, Cape Town.

† Exclusive of a few persons employed in getting asbestos and salt.

‡ These figures relate to Kimberley mines only.

CAPE COLONY—continued.

TABLE 335.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asbestos ... .. (exported)	88	89	1,483	40	41	645
Coal ... ..	183,759	183,708	180,422	165,557	168,214	158,929
Copper ore ... ..	45,356	46,084	613,789	27,396	27,836	308,004*
Orocidolite ... .. (exported)	3	3	150	2	2	70
Diamonds ... ..	carats 2,781,885	kilos. 571	5,387,955	carats 2,486,326	kilos. 511	4,949,807
Fireclay ... ..	900	914	Not stated.	670	681	Not stated.
Gold ... ..	ozs. 78	kilos. 2	302	Not stated.	—	Not stated.
Salt, white ... ..	Not stated.	—	Not stated.	Not stated.	—	Not stated.
Total value ... ..	—	—	6,184,001	—	—	5,417,455

TABLE 336.

DEATHS from ACCIDENTS at COAL and DIAMOND MINES during the Year 1902.

Class of Mine.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	4	—	4	23·8	—	1·82
Diamond (Kimberley Mines)	35	10	45	11·04	1·13	3·73
Total for Coal and Diamond Mines for 1902.	39	10	49	8·04	1·06	3·44
Total for preceding year...	27	13	40	5·21	1·51	2·89

Kimberley Diamond Mines.†

TABLE 337.

PERSONS EMPLOYED during the Years 1901 and 1902.

Year.	Under-ground.			Above-ground.			Total.		
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.
1901 ...	412	2,746	3,158	1,673	6,399	8,072	2,085	9,145	11,230
1902 ...	357	2,814	3,171	1,750	7,135	8,885	2,107	9,949	12,056

\* Value estimated.  
† Reports of the Inspector of Mines for Kimberley, &c., for 1901 and 1902, Cape Town, and Statistical Register for 1902, Cape Town.

## CAPE COLONY—continued.

## Kimberley Diamond Mines—continued.

TABLE 338.

DEATHS from ACCIDENTS during the Years 1901 and 1902.

Year.	Place.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
1901 ...	Under-ground ...	1	22	23	2·43	8·01	7·28
	Above-ground ...	—	13	13	—	2·03	1·61
	Total... ...	1	35	36	·48	3·83	3·21
1902 ...	Under-ground ...	3	32	35	8·40	11·37	11·04
	Above-ground ...	—	10	10	—	1·40	1·13
	Total... ...	3	42	45	1·42	4·22	3·73

TABLE 339.

CAUSES of ACCIDENTS in 1901.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud rushes... ..	3	—	6	6	—	1	1
Falls of ground ... ..	43	—	7	7	2	40	42
Falling down “ passes ” ... ..	1	—	1	1	—	—	—
Machinery ... ..	2	1	1	2	—	—	—
Falls from ladders... ..	8	—	—	—	—	9	9
On tramways or by trucks ... ..	7	—	1	1	—	6	6
Ground falling from sides of shaft	3	—	—	—	—	4	4
Falling down shafts ... ..	3	—	3	3	—	—	—
Explosives ... ..	8	—	3	3	2	6	8
Miscellaneous ... ..	3	—	—	—	2	2	4
Total ... ..	81	1	22	23	6	68	74



## CAPE COLONY—continued.

## Kimberley Diamond Mines—continued.

Table 339—continued.

## CAUSES of ACCIDENTS in 1901—continued.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Surface and Open Works.</i>							
Falls of ground and débris ...	38	—	7	7	3	29	32
On tramways or by trucks ...	55	—	3	3	7	46	53
Falling down open works... ..	1	—	—	—	—	1	1
Machinery ... ..	7	—	—	—	3	4	7
Explosives ... ..	5	—	—	—	1	4	5
Miscellaneous ... ..	11	—	3	3	3	5	8
Total ... ..	117	—	13	13	17	89	106
Totals (under and above ground)	198	1	35	36	23	157	180

TABLE 340.

## CAUSES of ACCIDENTS in 1902.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud-rushes... ..	2	—	3	3	—	1	1
Falls of ground ... ..	47	2	12	14	5	32	37
Falling down "passes" ... ..	3	—	3	3	—	—	—
Machinery ... ..	1	—	1	1	—	—	—
Whilst ascending or descending by machinery.	4	—	3	3	—	9	9
Falling down shaft ... ..	1	—	—	—	—	1	1
Falling off staging in shaft ...	1	—	1	1	—	—	—
Falls from ladders... ..	7	—	—	—	—	7	7
Ignition of gas ... ..	1	—	—	—	1	—	1
Ground falling from side of shaft	1	—	1	1	—	3	3
Things falling down shafts ...	2	—	—	—	—	2	2
On tramways or by trucks ...	9	—	—	—	—	9	9
Explosives ... ..	11	1	8	9	4	16	20
Miscellaneous ... ..	1	—	—	—	—	1	1
Total under-ground ...	91	3	32	35	10	81	91
<i>Surface and Open Works.</i>							
Falls of ground and débris ...	32	—	4	4	3	28	31
On tramways or by trucks ...	60	—	4	4	5	55	60
Machinery ... ..	12	—	—	—	4	8	12
Explosives ... ..	1	—	—	—	—	1	1
Miscellaneous ... ..	8	—	2	2	2	4	6
Total ... ..	113	—	10	10	14	96	110
Totals (under and above ground)	204	3	42	45	24	177	201

## Ceylon.\*

*Gems.*—In Ratnapura District 427 gem pits were opened during the year 1902, as against 416 in 1901, the principal stones found being rubies and cats' eyes. In Kandy District moonstones continue to be mined.

*Gold.*—Indications of the precious metal have been found in several places, but they are not sufficient at present to justify mining operations.

*Graphite.*—Plumbago or graphite is the most important mineral produced in Ceylon; it occurs in gneiss and mica schist, and the workings are sometimes carried on to a depth of from 150 to 200 yards.

*Mica.*—A small quantity is exported annually.

*Salt.*—This is obtained from salt lagoons or "pans," and the manufacture is a Government monopoly. None was collected in 1902.

*Stone.*—"Cabook" is a local name for laterite, the most useful building stone in the island.

TABLE 341.

PERSONS EMPLOYED† at MINES and MINERAL WORKINGS during the Years 1901 and 1902.

Kind of Workings.	Under-ground.			Above-ground.			Total Number of Persons Employed in Mines and Mineral Workings.
	Males.	Females.	Total.	Males.	Females.	Total.	
Mines ... ..	12,319	—	12,319	22,831	3,762	26,593	38,912
Mineral Workings other than Mines.	1,120	42	1,162	15,313	3,882	19,195	20,357
Total for 1902 ...	13,439	42	13,481	38,144	7,644	45,788	59,269
Total for preceding year.	16,081	57	16,138	31,483	6,369	37,852	53,990

TABLE 342.

— QUANTITY and VALUE of the MINERALS produced during the Years 1901 and 1902.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coral ... ..	251	255	43	605	615	79
Mica (exported) ... ..	cwt 19	kilos. 965	75	cwt. 1	kilos. 51	25
Plumbago (exported)... ..	22,348	22,707	640,643	25,189	25,593	701,091
Precious stones and pearls ... ..	—	—	2,656	—	—	207
Salt ... ..	Not stated.	—	Not stated.	2,750†	2,794	Not stated
Stone:—	blocks	—	—	blocks	—	—
"Cabook" ... ..	2,460,300	—	4,921	3,626,550	—	7,546
Gneiss ... ..	—	—	—	30,924	31,420	1,312
Granite ... ..	cubes 34,535	—	21,261	cubes 57,799	—	14,724
Gravel ... ..	—	—	—	17,102	17,376	1,756
Rubble stone ... ..	—	—	—	10,144	10,307	1,628
Total value ... ..	—	—	669,599	—	—	728,368

\* Ridgeway "Ceylon Report for 1902." *Colonial Report*, Annual, No. 396 [Cd. 1768-1], London, 1903, pp. 22 and 23. *Official Return furnished by the Government of Ceylon, and Blue Books for Ceylon for 1901 and 1902.*

† Salt, manufactured.



CEYLON—continued.

TABLE 343.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS during the Years  
1901 and 1902.

Kind of Workings.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.		
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Above-ground.	Under and Above Ground.
Mines ...	6	—	6	1	—	1	7	·49	·04	·18
Openworks...	—	—	—	—	—	—	—	—	—	—
Total for 1902.	6	—	6	1	—	1	7	·45	·02	·12
Total for pre- ceding year.	9	—	9	2	—	2	11	·56	·05	·20

Channel Islands.

The average number of persons employed each year in the stone quarrying industry of the Channel Islands is about 1,200.

TABLE 344. .

QUANTITY and VALUE of STONE exported during the Years 1901 and 1902.\*

Mineral and Islands where obtained.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
Guernsey and Jersey :	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Stone, dressed or rough (exported).	366,817	372,704	201,619	374,732	380,746	202,730

Christmas Island.†

This island possesses deposits of phosphate of lime which are rich enough to be of economic value. The phosphatic rock now being worked on a large scale is, in part at all events, a limestone altered into phosphorite by the percolation from overlying guano. Between five and six hundred persons are employed, and the shipments for 1902 were 61,178 tons, against 42,125 tons in 1901.

\* Annual Statement of Trade of the United Kingdom for 1902, p. 279.  
† Taylor, "Straits Settlements Report for 1902." Colonial Report, Annual, No. 406 [Cd. 1768-11], London, 1903, p. 18.

## Cyprus.\*

*Copper.*—This is obtained from the ancient copper mine at Lymni, in Papho ; small quantities only are at present exported for experiment.

*Gypsum.*—As shown by the table, gypsum is of some importance.

*Salt.*—The value of the salt obtained by allowing sea water to evaporate under the action of the sun's rays amounted to £4,663 during 1902-3.

*Umber.*—"Terra umbra" has long been known as a product of Cyprus.

— In addition to these minerals, sandstone and limestone are quarried for building and other purposes ; but the quantities are unknown.

TABLE 345.

QUANTITY and VALUE of the MINERALS produced during the Years 1901 and 1902.

Minerals.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	* £	Statute Tons.	Metric Tons.	£
Gypsum (exported)	6,959	7,071	3,492	7,030	7,143	3,597
Salt (collected) ...	†	—	†	3,386†	3,440	4,663
Umber (exported)	2,369	2,407	1,301	1,869	1,899	968
Total value ...	—	—	4,793	—	—	9,228

## Federated Malay States.‡

*Gold.*—Pahang has several mines which are working quartz veins ; by far the most important is the Raub Concession, although it has decreased its output from 18,901 ozs. of gold in 1901 to 11,494 ozs. in 1902.

*Tin.*—The Malay Peninsula is the great tin-producing region of the world at the present day, and the States with the largest output are under British protection. The ore is obtained almost exclusively from alluvial deposits, worked partly by the open quarry method and partly by true underground mining.

The output of Perak exceeded in 1902 any former record for that State, and the total quantity of metallic tin exported therefrom was 24,159 tons against 22,920 tons in 1901.

Hydraulic mining has been largely introduced for the purpose of working tin deposits in the Kinta district of Perak, and near Seremban in Negri Sembilan. There were 11 monitors at work in Perak in 1902, and there are now 24 at work.

A certain amount of vein mining is being carried on, and it is said that dredging the river beds will be tried before long.

The total number of coolies employed at the mines of the four different States, Negri Sembilan, Pahang, Perak, and Selangor, during the year 1902 amounted to 179,951.

TABLE 346.

PERSONS EMPLOYED at MINES during the Years 1901 and 1902.

State.	1901.	1902.
Negri Sembilan ... ..	20,000	24,000
Pahang ... ..	8,400	6,500
Perak ... ..	63,079	80,436
Selangor ... ..	71,098	69,015
Total ... ..	162,577	179,951

\* Blue Books for Cyprus for 1900-01 and 1901-02, and Official Return furnished by the Government of Cyprus.

† Not stated.

‡ Figures relating to the year ending March 31st, 1903. Quantity estimated.

§ Official Return furnished by the Mines Department, Kuala Lumpur, Selangor. *Annual Report on the Federated Malay States for 1902.* Kuala Lumpur, 1903.



## FEDERATED MALAY STATES—continued.

TABLE 347.

SUMMARY of QUANTITY and VALUE of MINERALS produced in the four States during the Years 1901 and 1902.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold ... ..	ozs. 23,948	kilos. 745	77,831	ozs. 19,554	kilos. 608	63,550
Tin* ... ..	46,740	47,490	5,082,847	46,480	47,226	5,438,043

TABLE 348.

## NEGRI SEMBILAN.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin* ... ..	4,479	4,551	486,982	4,376	4,446	511,992

TABLE 349.

## PAHANG.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold ... ..	ozs. 23,948	kilos. 745	77,831	ozs. 19,554	kilos. 608	63,550
Tin* ... ..	1,330	1,351	144,528	1,376	1,398	160,875

TABLE 350.

## PERAK.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin* ... ..	22,920	23,288	2,492,550	24,159	24,547	2,826,603

\* Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore smelted at Singapore and elsewhere.

FEDERATED MALAY STATES—continued.

TABLE 351.  
SELANGOR.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin* ... ..	18,011	18,300	1,958,587	16,569	16,835	1,938,573

TABLE 352.  
DEATHS from ACCIDENTS at MINES during the Years 1901 and 1902.

State.	Number of persons killed.		Death-rate per 1,000 persons employed.	
	1901.	1902.	1901.	1902.
Negri Sembilan ... ..	13	20	·65	·83
Pahang ... ..	7	5	·83	·77
Perak ... ..	†	21	†	·26
Selangor... ..	14	11	·20	·16
Total ... ..	34†	57	·34†	·32

Gold Coast.§

The name of the Colony points to its mineral resources. The principal gold mines are situated in Wassaw and Appolonia in the Western District. The rivers of the Colony are reported to be rich in alluvial deposits of gold. The gold exported in 1902 was obtained almost entirely from the mines of the Ashanti Goldfields Corporation and the Ashanti Sansu Mine. The former Company, with 65 stamps at work in 1902, crushed 16,348 tons of ore which yielded 16,408 ozs. of gold ; the latter, with 20 stamps, crushed 8,223 tons which yielded 9,949 ozs. of gold. The yield in each case, therefore, exceeded 1 oz. of gold to the ton.

The total output from the Colony, viz., 26,891 ozs., is the highest hitherto recorded.

The ores of silver, mercury, lead, tin, copper, and iron have been found, and sandstone is abundant.

TABLE 353.  
PERSONS EMPLOYED at GOLD MINES during the Year 1898.||

Under-ground.	Above-ground.			Total.
	Males.	Females.	Total.	
881	1,811	221	2,032	2,913

\* Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore smelted at Singapore and elsewhere.  
† Not ascertainable.  
‡ Excluding Perak.  
§ Official Return furnished by the Colonial Secretary of Gold Coast Colony, *Colonial Reports, Annual, No. 397* [Cd. 1768-2], London, 1903, pp. 28-30  
|| No later statistics showing the total number of persons employed appear to exist.



## GOLD COAST—continued.

The quantity and value of gold exported in 1901 and in 1902 were as follows :—

TABLE 354.

Metal.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Ozs.	Kilos.	£	Ozs.	Kilos.	£
Gold ... ..	6,162	192	22,187	26,891	836	96,810

The amount of gold obtained from the mines which furnished the returns of persons employed was 10,458 ozs.

TABLE 355.

DEATHS from ACCIDENTS at GOLD MINES during the Year 1898.\*

Under-ground.	Above-ground.	Total.	Death-rate per 1,000 persons employed.		
			Under-ground.	Above-ground.	Total.
1	—	1	1·13	—	·34

## India.†

The three most important minerals worked are :—coal, gold ore, and salt.

*Coal.*—The total output of coal in 1902 was 7,424,480 tons. Five-sixths of the coal produced in India comes from Bengal; the remainder is obtained from the Punjab, Central Provinces, Assam, Burma, Central India, the Nizám's Dominions, and Baluchistan.

The resources of India as a coal-producing country are immense, and very large areas, rich in mineral fuel, have not yet been touched. The principal coal mines are in the following coalfields and districts :—Raniganj, Girideh, and Jherria in Bengal, Singareni in the Nizám's Territory, Lakhimpur in Upper Assam, Mohpani and Warora in the Central Provinces, and at Umaria in the Central Indian Agency.

The output of coal in India has increased rapidly, and more than suffices to supply the wants of the country. During the year 1902 the imports of coal, coke, and patent fuel (mainly British) amounted to 258,026 tons, and the exports of coal (mainly from Bengal to Ceylon) to 430,099 tons.

*Gems and Precious Stones.*—Upper Burma has long been famous for its rubies, and the mining industry has entered the profitable stage. In addition, Upper Burma yields jade, a small amount of inferior amber, and some tourmaline.

*Gold.*—The most important mineral industry in India is gold mining; small quantities of the precious metal are washed from river sands in very many parts of the country, but the total amount so obtained is insignificant compared with the output of the quartz veins of Mysore. The value of the gold obtained is nearly 35 per cent. greater than that of the coal.

In Mysore the gold mines at work in 1902 employed 26,268 persons, and the output was 524,982 ozs. (16,329 kilos.) of gold.

*Iron.*—The various ores of iron, viz., magnetite, hematite, limonite, and clay ironstone, occur abundantly, and are smelted on a small scale by the aid of charcoal all over India. Barakar, in Bengal, is the only place where iron-smelting is carried on by modern methods on a comparatively large scale. At Barakar the conditions are extremely favourable, for coal, iron ore, and limestone are found in fairly close proximity.

\* No later figures available.

† Government of India, Department of Revenue and Agriculture, *Statistics of Mineral Production in India in the ten years 1893 to 1902*, Calcutta, 1903, and information furnished by Mr. G. A. Stonier, Chief Inspector of Mines in India.



## INDIA—continued.

**Manganese Ore.**—The chief deposits of manganese ore are near Kamptee in the Central Provinces, and in the Vizagapatam district, Madras.

**Mica.**—Quarrying and mining for mica are confined to the provinces of Bengal and Madras.

**Petroleum.**—The oil wells in Upper Burma, where petroleum has been obtained for more than 2,000 years, furnished in 1902, 54,848,980 gallons and Assam 1,756,759 gallons.

**Salt.**—The sources of the salt supply are: (a) rock-salt mines and quarries of the Punjab, Kohat, and Mandi State; (b) lakes and wells of Rajputana, wells and springs of the Punjab, and Upper Burma; (c) evaporation of sea water in Bombay, Sind, Madras, and Lower Burma.

**Saltpetre.\***—The nitre of India is obtained from a natural efflorescence from the soil, especially in the province of Bihar. The crude earth is purified by solution, filtration, evaporation, and crystallization.

The area over which saltpetre is manufactured is estimated at 232,314 square miles; and according to the census of 1891 there were 119,558 saltpetre workers and sellers in India.

According to the Official Statistical Department† the output given on page 344 is too low, for on an average 20,000 tons of saltpetre are exported annually from Calcutta.

**Slate**—This mineral is quarried at Monghyr, Bengal, and in the Kangra Valley, and Rewari, Punjab. It is used for roofing, paving, &c.

**Soda Salts.**—The carbonate and the sulphate of soda are manufactured in very many districts of India from the surface soil or from saline efflorescences, in like manner to saltpetre.

TABLE 356.

PERSONS EMPLOYED in and about MINES and QUARRIES in INDIA for the Years ending 31st December 1901 and 1902.‡

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
1901.							
Coal ... ..	46,028	19,640	65,668	19,314	10,327	29,641	95,309
Gems ... ..	1,209	35	1,244	648	5	653	1,897
Gold ... ..	14,392	—	14,392	9,261	1,853	11,114	25,506
Manganese ore ... ..	1,821	1,111	2,932	740	558	1,298	4,230
Mica ... ..	5,599	198	5,797	1,549	1,873	3,422	9,219
Plumbago ... ..	348	4	352	430	187	617	969
Salt ... ..	859	606	1,465	136	—	136	1,601§
Slate, &c. ... ..	1,219	162	1,381	1,400	979	2,379	3,760
Total ... ..	71,475	21,756	93,231	33,478	15,782	49,260	142,491
1902.							
Coal ... ..	48,835	19,397	68,232	20,293	10,377	30,670	98,902
Corundum ... ..	10	16	26	7	17	24	50
Gems ... ..	2,207	74	2,281	1,086	75	1,161	3,442
Gold ... ..	16,323	40	16,363	9,595	1,852	11,447	27,810
Iron ore ... ..	1,204	506	1,710	496	346	842	2,552
Magnesite ... ..	85	85	170	25	65	90	260
Manganese ore ... ..	3,243	1,955	5,198	482	367	849	6,047
Mica ... ..	4,780	1,250	6,030	1,669	1,801	3,470	9,500
Plumbago ... ..	244	—	244	343	113	456	700
Salt ... ..	1,358	680	2,038	188	22	210	2,248
Slate, &c. ... ..	1,692	425	2,117	1,964	1,163	3,127	5,244
Total ... ..	79,981	24,428	104,409	36,148	16,198	52,346	156,755¶

\* Hooper, *Review of the Mineral Production in India for 1897*, Calcutta, 1898, p. 54.

† *Ibid.*, p. i.

‡ Official Return furnished by Mr. G. A. Stonier, Chief Inspector of Mines in India.

§ Mines only.

|| Returns incomplete.

¶ Exclusive of 4,100 persons employed at the petroleum refineries.



## INDIA—continued.

TABLE 357.

SUMMARY of OUTPUT and VALUE of MINERALS during the Years 1901 and 1902.\*

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	Ra.	Statute Tons.	Metric Tons.	Ra.
Coal ... ..	6,635,727	6,742,214	19,850,582	7,424,480	7,543,625	20,503,639
Copper ore ... ..	Nil	—	—	4	4	(Not stated)
Gold ... ..	oss. 532,126	kilos. 16,551	28,956,159	oss. 517,639	kilos. 16,100	29,553,456
Iron ore ... ..	71,729	72,880	(Not stated)	85,235	86,603	(Not stated)
Magnesite ... ..	‡	‡	(Not stated)	3,540	3,597	(Not stated)
Manganese ore ... ..	76,463	77,690	520,373	68,171	69,265	463,942
Do. do. ... ..	44,428	45,141	(Not stated)	89,609	91,047	(Not stated)
Mica ... ..	815†	828	1,050,226	1,021†	1,037	1,312,837
Do. ... ..	(Not stated)	—	285	(Not stated)	—	1,072
Petroleum ... ..	gals. 50,075,117	litres 227,514,191	3,065,131	gals. 56,607,688	litres 257,194,653	3,267,245
Plumbago ... ..	2,490	2,530	(Not stated)	4,575	4,648	(Not stated)
Salt ... ..	1,102,101	1,119,787	5,612,423	1,040,438	1,057,135	4,799,116
Saltpetre ... ..	12,550	12,751	(Not stated)	—	—	—
Tin ore ... ..	70	71	116,595	100	102	80,096

TABLE 358.

OUTPUT and VALUE of MINERALS, classified according to the PROVINCES or STATES, for the Years 1901 and 1902.†

Mineral and Province or State where wrought.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
INDIA.	Statute Tons.	Metric Tons.	Rupees.	Statute Tons.	Metric Tons.	Rupees.
Assam.						
Coal ... ..	254,100	258,178	1,206,975	221,096	224,644	1,048,040
Petroleum ... ..	gals. 631,571	litres 2,809,516	33,252	gals. 1,756,759	litres 7,981,761	87,838
Bengal.						
Copper ... ..	—	—	—	4	4	(Not stated)
Coal ... ..	5,487,585	5,575,648	14,496,413	6,259,236	6,359,632	14,519,407
Iron ore ... ..	65,600	66,653	(Not stated)	82,482	83,806	(Not stated)
Mica ... ..	594	604	797,100	833	846	1,023,033
Salt ... ..	174	177	1,185	119	121	815

\* Government of India, Department of Revenue and Agriculture, *Statistics of Mineral Production in India in the ten years 1893 to 1902*, Calcutta, 1903, and *Report of the Chief Inspector of Mines in India for the year ending 31st December, 1902*, Calcutta, 1903.

† Exported.

‡ Government of India, Department of Revenue and Agriculture, *Statistics of Mineral Production in India 1893 to 1902*, Calcutta, 1903.

## INDIA—continued.

OUTPUT and VALUE of MINERALS, classified according to PROVINCES or STATES, for the Years 1901 and 1902—continued.

Mineral and Province or State where wrought.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
<b>INDIA—cont.</b>						
<i>Madras.</i>	Statute Tons.	Metric Tons.	Rupees.	Statute Tons.	Metric Tons.	Rupees.
Magnesite ... ..	†	‡	(Not stated)	3,540	3,597	(Not stated)
Manganese ore ... ..	76,463	77,690	530,373	68,171	69,265	463,942
Mica ... ..	221*	225	253,126	188	191	239,805
Salt ... ..	339,544	344,993	1,747,271	358,450	364,902	1,798,415
<i>Bombay, including Sindh.</i>						
Mica ... ..	(Not stated)	—	285	(Not stated)	—	1,072
Salt ... ..	335,324	340,705	981,072	392,037	398,328	1,170,889
<i>Burma.</i>						
Coal ... ..	12,466	12,088	93,495	13,302	13,515	93,114
Gold ... ..	ozs. 1,984	kilos. 62	114,100	ozs. 2,179	kilos. 68	88,420
Petroleum ... ..	gals. 49,441,734	litres 224,636,442	3,031,595	gals. 54,848,930	litres 249,204,037	3,179,001
Plumbago ... ..	—	—	—	—	—	—
Salt ... ..	21,500	21,845	830,159	20,170	20,494	762,010
Tin ore ... ..	70	71	116,595	100	102	80,096
<i>Central Provinces.</i>						
Iron ore ... ..	2,377	2,415	(Not stated)	—	—	—
Coal ... ..	191,516	194,539	875,151	196,981	200,142	878,848
Manganese ore ... ..	44,428	45,141	(Not stated)	89,609	91,047	(Not stated)
<i>Punjab.</i>						
Coal ... ..	67,730	68,817	553,604	55,373	56,282	360,586
Petroleum ... ..	gals. 1,812	litres 8,233	284	gals. 1,949	litres 8,855	406
Salt ... ..	405,068†	411,568	2,028,821‡	269,177†	273,497	1,066,989‡
<i>Native States.</i>						
Coal ... ..	632,330	632,317	2,624,944	678,492	689,380	3,603,644
Gold ... ..	ozs. 530,142	kilos. 16,489	28,842,059	ozs. 515,460	kilos. 16,033	29,465,036
Iron ore ... ..	3,752	3,812	(Not stated)	2,753	2,797	(Not stated)
Plumbago ... ..	2,490	2,530	(Not stated)	4,575	4,648	(Not stated)
Salt ... ..	491§	499	23,915	485§	493	(Not stated)

\* Exported.

† Including output of Rajputana.

‡ " value "

§ Exclusive of a large quantity included under Punjab.



## INDIA—continued.

TABLE 359.

NUMBER OF DEATHS FROM ACCIDENTS AT MINES AND QUARRIES during the Years  
1901 and 1902.\*

Class of Mines or Workings.	1901.			1902.		
	Number of Deaths.			Number of Deaths.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	66	4	70	68	9	77
Gems ... ..	6	1	7	6	3	9
Gold† ... ..	61	14	75	‡	‡	59
Manganese ... ..	—	1	1	1	—	1
Mica ... ..	18	—	18	2	—	2
Salt ... ..	3	—	3	—	—	—
Slate, &c. ... ..	3	—	3	—	—	—
Total ... ..	157	20	177	‡	‡	148

TABLE 360.

DEATH-RATE FROM ACCIDENTS AT MINES AND QUARRIES during the Years  
1901 and 1902.\*

Class of Mines or Workings.	1901.			1902.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	1·01	·13	·73	1·00	·29	·78
Gems ... ..	4·82	1·53	3·69	2·63	2·58	2·61
Gold ... ..	4·24	1·26	2·94	‡	‡	2·12
Manganese ... ..	—	·77	·24	·19	—	·17
Mica ... ..	3·11	—	1·95	·33	—	·21
Salt ... ..	2·05	—	1·87	—	—	—
Slate, &c. ... ..	2·17	—	·80	—	—	—
Total .. ..	1·68	·41	1·24	‡	‡	·94

\* Report of the Chief Inspector of Mines in India for the year ending 31st December, 1902, Calcutta, 1903.

† Including Mysore Gold Mines.

‡ Not stated.

TABLE 361.

## DEATHS from ACCIDENTS at the MYSORE GOLD MINES.\*

Year.	Persons Employed.	Deaths.			Death-rate per 1,000 Persons Employed.		
		Under- ground.	Above- ground.	Total.	Under- ground.	Above- ground.	Total.
1898 ... ..	21,597	48	5	53	4.09	.51	2.45
1899 ... ..	21,093	32	6	38	2.66	.66	1.80
1900 ... ..	21,587	55	8	63	4.17	.70	2.56
1901 ... ..	25,060	61	14	75	4.29	1.29	2.99
1902 ... ..	26,268	—	—	58	—	—	2.20
Average death-rate	—	—	—	—	—	—	2.42

Mining in India is governed by Act No. VIII. of 1901: "An Act to provide for the Regulation and Inspection of Mines."

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**Labuan.** (See BRITISH BORNEO.)

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**Leeward Islands.** (See REDONDA.)

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**Malta.**

A soft oolitic limestone is quarried for building purposes; 51,953 slabs, and 800 tons in blocks of stone were exported in 1901.†

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**Natal** (including ZULULAND).‡

The output of coal is steadily increasing. It is interesting to report that there were 11 electrical coal-cutters in operation in 1902, and that 24 per cent. of the total output of coal was cut by these machines.

In addition to coal, the Colony is stated to possess deposits of asbestos, copper ore, gold ore, graphite, gypsum, lead ore, limestone, marble, mica, molybdenum, nickel ore, and slate. During the year 1902 considerable progress was made in developing the workings of several of these minerals.

TABLE 362.

## PERSONS EMPLOYED at PRODUCING COLLIERIES during the Years 1901 and 1902.

Year.	Below-ground.	Above-ground.	Total.
1901	2,321	1,076	3,397
1902	2,623	1,227	3,850

\* Official Returns furnished by Mr. G. A. Stonier, Chief Inspector of Mines in India, and Report of the Chief Inspector of Mines for Mysore for 1901. Bangalore, 1902.

† Gov. Sir F. G. Grenfell, "Malta. Report for 1901." Colonial Reports—Annual, No. 358 [Cd. 788-28].

‡ Reports on the Mining Industry of Natal for 1901 and 1902. Pietermaritzburg.



NATAL—continued.

TABLE 363.  
QUANTITY and VALUE of COAL and GOLD produced during the Years 1901  
and 1902.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
Coal ... ..	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold (fine) ... ..	569,200	578,334	549,439	592,821	602,334	512,574
Mica ... ..	ozs. 143	kilos. 4	531	ozs. 78	kilos. 2	331
	—	—	—	51	52	Not stated.

TABLE 364.  
DEATHS from ACCIDENTS at PRODUCING COLLIERIES during the Years 1901  
and 1902.

Year.	Under-ground.			Above-ground.			Total Under-ground and Above-ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1901	40	—	40	3	—	3	43	12.66
1902	12	—	12	4	—	4	16	4.16

In addition to the 16 deaths recorded in the table, there were 2 persons killed at collieries which had not reached the production stage.

Newfoundland.\*

At the present time the important mineral exports from Newfoundland are copper ore, copper regulus, and iron ore.

Copper Ore.—The mines at Tilt Cove are by far the largest producers.

Gold.—The discovery of gold-bearing quartz veins in the Island has led to the commencement of operations for obtaining the precious metal. Two mines have been started, one at Rose Blanche, on the southern seaboard, and the other at Sopp's Arm, in White Bay.

Iron Ore.—The whole of the ore comes from Belt Island, Conception Bay, where valuable deposits of red hæmatite are being mined on a large scale ; the ore is shipped to Nova Scotia and to the United States.

Slate.—The Wilton Grove Slate quarry in Smith's Sound is worked actively ; and the slate is imported into England with profit.

TABLE 365.  
PERSONS EMPLOYED at MINES and QUARRIES during the Years 1901 and 1902.

Kind of Workings.	1901.			1902.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Copper mines ...	201	167	368	—	—	448
Iron ore workings	909	44	953	‡	‡	791
Pyrites „	—	—	—	—	—	225
Gold „	—	—	—	—	—	30
Stone quarries ...	100	—	100†	—	—	262‡
Total ...	1,210	211	1,421	‡	‡	1,756

\* Report on the Mineral Resources for 1902, by J. P. Howley, Director of Geological Survey of Newfoundland, 1903.  
† Incomplete.  
‡ Not stated.

## NEWFOUNDLAND—continued.

TABLE 366.

QUANTITY and VALUE of the MINERALS produced during the Years 1901 and 1902.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Barytes ... ..	—	—	—	315	320	129
Copper ore and regulus* ...	75,348	76,557	73,992	74,608	75,805	54,619
Granite... ..	3,240	3,292	4,050	2,955	3,002	3,643
Iron ore ... ..	733,206	750,052	151,686	723,721	740,415	149,737
Iron pyrites ... ..	7,532	7,653	7,629	26,000	26,417	24,041
Limestone ... ..	1,300	1,321	200	1,150	1,168	71
Slate ... ..	2,000	2,032	4,623	3,500	3,556	9,041
Stone :—						
Cobble ... ..	500	508	103	500	508	103
Building ... ..	5,000	5,080	1,027	5,000	5,080	1,233
Paving ... ..	—	—	2,903	2,250	2,286	3,699
Total Value ... ..	—	—	246,213	—	—	246,316

TABLE 367.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1901 and 1902.

Kind of Workings.	1901.		1902.	
	Number of Persons Killed.	Death Rate per 1,000 Persons Employed.	Number of Persons Killed.	Death Rate per 1,000 Persons Employed.
Copper Mines ... ..	—	—	1	2.23
Iron Ore Workings ... ..	1	1.05	4	5.06
Pyrites Workings ... ..	—	—	1	4.44
Total ... ..	1	.70	6	3.42

New Guinea (see BRITISH NEW GUINEA).

\* The copper ore contains a little gold. It is estimated that 2,660 tons of metallic copper, and 4,000 ozs. of fine gold were obtainable from the ore in 1902.



## New Zealand.\*

The three important minerals worked in New Zealand are coal, gold, and kauri gum.

*Coal.*—180 collieries were at work in 1902. The largest are near Westport, on the west coast of the Middle Island. More than one-third of the total output of New Zealand is brown coal or lignite, obtained in the Southern district of Middle Island; many of the workings are open-cast.

A new departure has been made in New Zealand, as the Minister of Mines has now begun to work coal mines under "The State Coal Mines Act, 1901." The mines are situated at Point Elizabeth and Seddonville; they have not yet reached the producing stage.†

*Gold.*—The value of the output of gold now approaches two millions sterling. The precious metal occurs in various parts of the Islands; it is extracted by ordinary alluvial diggings, by hydraulic mining, by dredging river beds and river flats, and by quartz mining. Probably there is more gold dredging in New Zealand than in any other part of the world, and this branch of mining finds employment for more than 2,000 persons in the Colony. During the year 1902, 201 dredges were at work and 23 under construction, in addition to 52 standing and 14 under removal.

*Kauri Gum.*—Digging kauri gum upon the sites of old pine forests affords employment to a large number of Europeans and natives.

*Phosphate of Lime.*—Deposits of phosphate of lime were discovered in the spring of 1902, and are already being worked.‡

TABLE 368.

PERSONS EMPLOYED at COAL MINES during the years 1901 and 1902.§

	Year.	Under-ground.	Above-ground.	Total.
	1901	2,066	688	2,754
	1902	2,082	803	2,885

TABLE 369.

PERSONS EMPLOYED at GOLD MINES during the Years 1901 and 1902.||

Mining District.	Alluvial Miners.		Quartz Miners.		Total.		Grand Total.	
	European.	Chinese.	European.	Chinese.	European.	Chinese.	1902.	1901.
Auckland .. ...	—	—	2,752	—	2,752	—	2,752	3,508
Marlborough ... ..	106	—	29	—	135	—	135	189
Nelson ... ..	1,166	284	795	—	1,961	284	2,245	2,905
Westland ... ..	1,840	305	—	—	1,840	305	2,145	1,681
Otago ... ..	3,269	621	231	—	3,500	621	4,121	4,449
Total ... ..	6,381	1,210	3,807	—	10,188	1,210	11,398	12,732

\* Hon. James McGowan, *New Zealand, Mines Statement*. Wellington, 1903.† *New Zealand, Report on the working of State Coal Mines for the year ending 31st March, 1903*. Wellington, 1903.‡ *Report of the Department of Mines on the Goldfields of New Zealand for the year 1902*. Wellington, 1903, p. 23.§ *New Zealand, Inspection of Coal Mines Reports*. C.—3a, Wellington, 1902 and 1903.|| Hon. James McGowan, *New Zealand, Mines Statement*. Wellington, 1903. C.—2, p. 16.

## NEW ZEALAND—continued.

TABLE 370.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.\*

Mineral.	1901.			1902.		
	Quantity		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Antimony ... ..	30	30	138	—	—	—
Chrome ore ... ..	—	—	—	175	178	525
Coal (including Brown Coal and Lignite).	1,227,638	1,247,339	676,174	1,362,702	1,384,570	741,759
Copper ore ... ..	3	3	105	—	—	—
Gold ... ..	ozs. 455,561	kilos. 14,169	1,753,783	ozs. 508,045	kilos. 15,802	1,951,433
Iron ore† (Haematite) ... ..	—	—	—	17	17	116
Kauri gum ... ..	7,541	7,662	446,114	7,430	7,549	450,223
Manganese ore ... ..	208	211	614	—	—	—
Oil Shale ... ..	12,048	12,241	6,024	2,338	2,376	1,169
Silver ... ..	ozs. 571,134	kilos. 17,764	65,258	ozs. 674,196	kilos. 20,970	71,975
Sundry mixed minerals ... ..	696	707	7,775	415	422	4,422
Total value ... ..	—	—	2,955,983	—	—	3,221,622

TABLE 371.

DEATHS from ACCIDENTS at MINES and DREDGING WORKS during the Years 1901 and 1902.\*

Kind of Workings.	1901.		1902.	
	Number of Deaths.	Death-rate per 1,000 Persons Employed.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
Coal mines ... ..	3	1·09	2	·69
Gold mines ... ..	6	1·31	2	·53
" alluvial, hydraulic, sluicing and dredging.	8	·98	12	1·58
Total ... ..	17	1·10	16	1·12

\* Hon. James McGowan, *New Zealand, Mines Statement*. Wellington, 1903. C.—2, pp. 2 and 7.

† Used for paint.



Nigeria.\*

Several prospecting licenses were taken out during the year 1902, but with the exception of the Niger Company who exported 21½ cwts. of tin, valued at £79, during the year, the syndicates do not appear to have produced any very tangible results. The tin found by the Niger Company, in the course of prospecting, is alluvial and consists of coarse and fine grains ; it is at present worked by the natives over an area of 11 miles of river and tributaries. The fine tin has been traced for a further distance of 14 miles, making altogether a length of 25 miles of river commercially workable for this metal. In addition to tin, Nigeria is known to contain deposits of antimony and silver.

North Borneo. (See BRITISH BORNEO.)

Nova Scotia. (See CANADA.)

Ontario. (See CANADA.)

Orange River Colony.

*Coal.*—The Colony possesses valuable coal resources. No particulars of output have yet been received.

*Diamonds.*†—29,302 carats, realising a value of £79,440, were produced from the Jagersfontein mine during the financial year ended 31st March, 1903.

Quebec. (See CANADA.)

Redonda‡ (Leeward Islands).

On an average 12 persons were employed in getting phosphate during the year 1902.

TABLE 372.

QUANTITY and VALUE of MINERAL produced during the Years 1901 and 1902.

Mineral.	1901.			1902.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Phosphate of alumina ...	Nil.	—	—	130	182	162

\* Sir F. Lugard. "Northern Nigeria Report for 1902." *Colonial Reports*—Annual No. 409. [Cd. 1768-14], London, 1903, pp. 69 and 70.

† *The New Jagersfontein Mining and Exploration Company, Ltd. Fifteenth Annual Report and Accounts for the year ended 31st March, 1903.* Kimberley, 1903. Page 5.

‡ Information furnished by the London Phosphate Syndicate, Ltd.

### Rhodesia.

Rhodesia is rich in coal, gold and other minerals.\*

*Coal.*—The Wankie coalfield, 140 miles north-west of Bulawayo, has now been reached by the railway, and the regular supply of good coal to the gold mines will have the effect of reducing the working expenses.

*Copper.*—Ores of this metal are reported to exist in the Lomagundi and Victoria districts of Southern Rhodesia, but it is in Northern Rhodesia that the most valuable deposits have been discovered.

*Gold.*—The auriferous deposits are very extensive, and the output of gold is increasing.

*Lead and Zinc.*—Important deposits of these minerals have been found.

TABLE 373.

#### OUTPUT of GOLD.\*

1901.			1902.		
Quantity.		Value.	Quantity.		Value.
Ozs.	Kilos.	£	Ozs.	Kilos.	£
172,035	5,351	623,627	194,170	6,039	703,866

Nearly 8,000 natives are at work in the mines of Matabeleland†.

### Sarawak. (See BRITISH BORNEO.)

### Somali Coast Protectorate.‡

Mica is found and there are indications of iron ore.

### Straits Settlements.§

There are no mines of importance in the Straits Settlements proper, viz., Penang, Province Wellesley, Malacca and Singapore; the value of the alluvial tin from Malacca in 1901 was £136, and in 1902 only £60.

Laterite is quarried for road metalling in Singapore and Malacca, and granite in the islands to the east of Singapore.

\* J. F. Jones.—*The British South Africa Company, 1902. Report upon the present Condition of Rhodesia.* London, 1903.

† *Ibidem*, p. 22.

‡ Consul-General Hayes Sadler, "Trade of the Somali Coast for the year 1898-1899." *Dipl. and Cons. Reports*, No. 2,384, Ann. Ser., 1900 [Cd. 1-21].

§ Acting Governor Taylor. "Straits Settlements Report for 1902." *Colonial Reports—Annual*, No. 406. [Cd. 1768-11]. London, 1903, p. 18.



Transvaal.\*

Coal, diamonds and gold are the only minerals worked in the colony.

*Coal.*—About 60 per cent. of the output comes from the Springs, Brakpan area, and 29 per cent. from the Middleburg area. The total output for 1902, though double that of the previous year, is still considerably less than the yield of 1898.

*Diamonds.*—1,064 carats were found in the Christiana district.

*Gold.*—The gold mining industry is far from having recovered the prosperity which it enjoyed before the war. The following table† makes a telling comparison.

TABLE 374.

—				August, 1899.	December, 1902.
No. of mines working	...	...	...	77	48
No. of stamps at work	...	...	...	6,070	3,010
Tons of ore crushed	...	...	...	856,233	398,064

TABLE 375.

AVERAGE NUMBER of PERSONS EMPLOYED at MINES‡ during the year ended 31st December, 1902.

Kind of Mines.	Underground.		Above-ground.		Total.	
	Whites.	Coloured.	Whites.	Coloured.	Whites.	Coloured.
Coal ... ..	74	3,274	193	1,898	267	5,172
Gold ... ..	2,738	17,395	4,744	12,500	7,482	29,895
Total ... ..	2,812	20,669	4,937	14,398	7,749	35,067
Total for six months ended 31st December, 1901.	704	8,392	1,997	8,445	2,701	16,837

\* Weldon.—*Transvaal Mine Department. Statistics for the Half-year ending 31st December, 1902.* Pretoria, 1903. *Yearly Report of the Government Mining Engineer for the year ending 30th June, 1902.* Pretoria, 1902.  
† *South Africa. Papers relating to the Progress of Administration in the Transvaal and Orange River Colony.* [Od. 1551.] London, 1903, p. 139.  
‡ Producing and non-producing mines.

TRANSVAAL—*continued.*

TABLE 376.

OUTPUT and VALUE of MINERALS during the six months ended 31st December, 1901,  
and for the year ended 31st December, 1902.

Mineral.	For Six Months ended 31st December, 1901.			Year 1902.*		
	Quantity.		Value.	Quantity.		Value.
Coal ... ..	Tons. 468,169	<i>Metric Tons.</i> 475,682	£ 201,634	Tons. 1,590,33	<i>Metric Tons.</i> 1,615,854	£ 637,640
Diamonds ... ..	—	—	—	carats 1,064	—	2,402
Gold (Fine) ... ..	ozs. 230,801	<i>kilos.</i> 7,179	980,381	ozs. 1,718,921	<i>kilos.</i> 53,464	7,301,501
Total ... ..	—	—	1,182,015	—	—	7,941,543

The table of exports below affords further information concerning the output of gold.

TABLE 377.

Source of the gold.	Quantity of fine gold.	Value at £4·24773 per oz.
Stamp mills at the mines ... ..	Ozs. 1,063,416	£ 4,517,098
Chemical processes at the mines ... ..	610,253	2,592,186
Metallurgical and chemical works ... ..	42,865	182,081
Tailings Syndicates and non-crushing mines.	2,368	10,057
Alluvial workings ... ..	19	79
Total ... ..	1,718,921	7,301,501

The importance of the chemical processes for the extraction of gold, and more particularly of the cyanide process, is very evident from the above figures.

TABLE 378.

FATAL ACCIDENTS at COAL and GOLD MINES during the year ended  
31st December, 1902.

Mines.	Number of persons killed.			Death-rate per 1000 persons employed.
	White.	Coloured.	Total.	
Coal ... ..	1	22	23	4·23
Gold ... ..	29	114	143	3·83
Total ... ..	30	136	166	3·88
Total for six months ended 31st December, 1901.	1	25	26	1·33

\* *South Africa. Papers relating to the Progress of Administration in the Transvaal and Orange River Colony* [Od. 1551], London, 1903, pp. 139 and 140; and Weldon.—*Transvaal Mines Department. Statistics for half-year ending 31st December, 1902*, Pretoria, 1903.



## TRANSVAAL—continued.

TABLE 379.

FATAL ACCIDENTS at COAL and GOLD MINES, CLASSIFIED according to cause, during the year ended 31st December, 1902.

Cause of Accident.	Persons Killed.			
	Coal Mines.		Gold Mines.	
	Whites.	Coloured.	Whites.	Coloured.
Explosives ... ..	—	—	6	20
Overwinding ... ..	—	—	—	1
Travelling in cage or skip ... ..	—	1	2	7
Struck by cage, skip or hauling rope	1	—	1	4
Travelling by ladders ... ..	—	—	—	2
Falling in shafts, excavations, &c....	—	—	—	10
Falling of material ... ..	—	—	3	12
Fall of rock ... ..	—	12	3	42
Trucks and tramways ... ..	—	7	—	1
Boilers and steam pipes ... ..	—	—	1	2
Machinery ... ..	—	2	4	3
Directly caused by electricity ...	—	—	—	2
Miscellaneous... ..	—	—	9	8
Total ... ..	1	22	29	114

Considerable improvements are being made in the housing and feeding of the native workmen,\* who appear to have suffered severely from scurvy and other diseases. But as shown by the Report of the Miners' Phthisis Commission,† the whites have not been exempt from maladies induced by their occupation. The Commissioners bring forward facts showing that the disease has been terribly fatal especially among the men employed in boring dry holes with rock drills ; they report that it is in reality silicosis, and that it is caused by the inhalation of fine sharp particles of dust. According to the medical evidence, the disease is usually of a non-tubercular type. Among the remedies proposed is the introduction of a jet of water into the hole during the process of boring, and the Government Mining Engineer in his Report for 1902‡ speaks somewhat hopefully of the special flushing device of the Water Leyner Rock Drill for this purpose.

\* *South Africa. Papers relating to the Progress of Administration in the Transvaal and Orange River Colony* [Cd. 1551], London, 1903, p. 186 ; and Weldon, *Transvaal Mines Department.—Yearly Report of the Government Mining Engineer for the Statistical year ending June 30th, 1902*, Pretoria, 1902, p. 10.

† Pretoria, 1903.

‡ *Op. cit.*, p. 8.

## Trinidad.\*

*Asphalt.*—The pitch or asphalt deposit at La Brea continues to be a fruitful source of revenue, for the royalties received by the Colonial Government in the year ended 31st March, 1903, amounted to £53,103.

During the course of the year 1902 an enquiry into the asphalt industry was held by Mr. J. W. Gordon and Professor Henry Louis, Commissioners appointed by the Colonial Office, and their report† is full of valuable information. They consider that there is no existing source of supply replenishing the Pitch Lake, and that for all practical purposes the deposit of asphalt must be considered as limited in amount. Among other recommendations they advise that the digging of pitch should be placed under the supervision of an Inspector of Mines, one of whose duties would be to settle disputes between diggers, and arrange for compensation if necessary.

*Coal.*—An extensive coal deposit is being explored in the Guanapo District by the Government. Seams of coal of a fairly good quality have been found at three different depths, and the yield promises to be good. Several private companies are making explorations for coal in different parts in the island.

*Glance Pitch.*—Large quantities of this mineral, also known as manjak, have been found at Marbella and Vistabella in Naparima, 566 tons having been exported during the year.

*Petroleum.*—Borings for mineral oil have been made in various places with more or less success.

*Stone.*—There are several limestone quarries; the most important are situated to the east of Port-of-Spain, Pointe Gourde, Carrera and Gasparillo Islands.

TABLE 380.

QUANTITY and VALUE of ASPHALT exported in the Years 1901-2 and 1902-3.

Mineral.	1901-1902.†			1902-1903.†		
	Quantity.		Value.	Quantity.		Value.
	Galls.	Litres.	£	Galls.	Litres.	£
Asphalt, liquid ... ..	20,492	93,105	169	—	—	—
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
" purified ... ..	15,648	15,899	31,296	11,427	11,010	22,854
" raw ... ..	127,747	129,797	127,748	145,712	148,050	145,712
" dried ... ..	589	598	589	1,997	2,020	1,997
Total value ... ..	—	—	159,802	—	—	170,563

## Turks and Caicos Islands.§

The production of salt is the most important industry in these islands. It is obtained by the solar evaporation of sea water in shallow ponds on the coast. Most of it is exported to the United States and Canada.

\* *Blue Book for Trinidad*, 1902-3, AA 2; and Governor Sir A. Maloney "Trinidad and Tobago Report for 1902-3."—*Colonial Reports*—Annual, No. 407, [Cd. 1768-121, London, 1903.

† *Colony of Trinidad*.—*Report of the Asphalt Industry Commission*. London, 1902.

‡ Year ended 31st March.

§ Governor Sir A. W. L. Hemming, "Turks and Caicos Islands Report for 1902."—*Colonial Reports*—Annual, No. 394, [Cd. 1388-18], London, 1903.



TURKS AND CAICOS ISLANDS—continued.

TABLE 381.

QUANTITY and VALUE of SALT exported during the years 1901 and 1902.

Mineral.	1901.			1902.		
	Quantity Exported.		Value.	Quantity Exported.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Salt    ...    ...    ...	52,312	58,151	22,782	50,205	51,011	22,196

Uganda Protectorate.\*

What little is known about the mineral resources of Uganda may be summed up as follows :—Fragments of coal are found in the bed of the streams all round Mount Elgon ; there are traces of copper in Busoga ; iron ore is abundant in the Protectorate, and alluvial gold is known to exist in parts lying far from the railway.

Wei-hai-wei.†

It is proposed to start a gold mine in the Dependency.

West Indies. (See BARBADOS, DOMINICA, REDONDA, and TRINIDAD.)

\* Sir H. H. Johnston, *Report on the Uganda Protectorate, Africa*, No. 7 (1901). [Cd. 671]. London, 1901, p. 12.  
† Lockhart.—“ Wei-hai-wei, Report for 1902.” *Colonial Reports—Annual*. No. 388 [Cd. 1388-12], London, 1903, p. 22.

## FOREIGN COUNTRIES.

## Abyssinia.\*

*Coal.*—Workable lignite is said to occur at Debra, Libanos, and Ankober.

*Gold.*—This metal is obtained from the Wallega, Shankalla, and Benischongul districts. The gold exported from Addis Abbaba and Harrar was estimated to be worth £139,600, the amount of fine gold may be reckoned to have been 31,161 ozs., and of fine silver contained in the gold about 2,710 ozs.

*Salt.*—Mines at Arho in the Tittal country between Makallé and the Red Sea produce a large quantity of salt; the mineral is likewise obtained from Gojam. The estimated value of the salt produced in the whole of the Addis Abbaba district amounted to £18,700.

## Algeria.†

The two principal minerals raised in Algeria are iron ore and phosphate of lime. A considerable quantity of limestone is quarried, and the workings for salt and zinc ore are of some importance.

*Antimony Ore.*—This mineral is being worked at Hamimat.

*Iron Ore.*—Most of the iron ore, which is magnetite and manganiferous hæmatite, is produced by the Mokta-el-Hadid Mines near Bona and the Benisaf Mines near Tlemsen. The former produced 97,000 tons and the latter 374,000 tons in 1902.

*Marble.*—Numidian marble had won renown in the time of the Romans. The onyx marble produced by the Colony is of great beauty. One of the localities where it is found is Sidi-Hamza. Quarries at Filfila near Philippeville produce statuary marble as well as many coloured varieties. Other quarries are situated at Tekbalet and Oued Chouly in the Department of Oran.

*Petroleum.*—Great hopes are based upon the occurrence of mineral oil in the Department of Oran; of the existence of wide petroliferous zones there is no question. It remains to be seen how far the oil can be extracted with profit. The "Société des Petroles Françaises" is laying down plant at St. Aimé for refining its products.

*Phosphate of Lime.*—The growth of the phosphate industry has been very rapid. The annual output, which was only about 5,000 tons in 1893, rose to more than 300,000 tons in 1900. The phosphate is quarried in the vicinity of Tébessa and at Tocqueville in the Province of Constantine, and it is now the most important mineral product of Algeria. The production was 305,174 tons in 1902.

*Salt.*—Nearly all the salt was produced from lakes in the Departments of Constantine and Oran.

*Zinc Ore.*—Calamine and blende are both worked and especially in the Department of Constantine.

TABLE 382.

PERSONS EMPLOYED during the Years 1901 and 1902.

Year.	At Mines.	At Underground Quarries.	At Open Quarries.
1901	2,735	1,000	3,033
1902	3,021	1,000	3,286

\* Baird, "Report on the Trade of Addis Abbaba, and Harrar, Abyssinia." *Dipl. and Cons. Reports* No. 2531, Ann. Ser., 1899-1900 [Cd. 352-27], 1900, with map.

† *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1901, and pour l'année 1902*; and Hay-Newton, "Report on the Trade of Algeria for the year 1902." *Dipl. and Cons. Reports*, No. 3071, Ann. Ser. [Cd. 1766-5]. London 1903.



ALGERIA—continued.

TABLE 383.

QUANTITY and VALUE of the MINERALS produced from Mines during the Years 1901 and 1902.\*

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony ore ... ..	—	—	39	12,000
Brown coal ... ..	213	2,556	285	3,424
Copper ore ... ..	7,267	125,866	1,955	178,185
Iron ore ... ..	514,473	4,966,983	525,012	5,036,426
Lead ore, argentiferous ... ..	1,614	109,581	26	2,762
Mercury... ..	—	—	92	3,818
Rock salt and salt from brine ... ..	18,518	399,879	27,263	563,961
Zinc ore ... ..	26,913	1,317,608	33,139	2,070,180
Total Value in Francs ... ..	—	6,922,473	—	7,870,756
„ „ £ sterling ... ..	—	276,899	—	314,830

TABLE 384.

QUANTITY and VALUE of MINERALS produced from Quarries during the Years 1901 and 1902.\*

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Clay ... ..	119,195	425,990	122,850	437,575
Flags ... ..	8,350	85,600	10,000	100,000
Gypsum ... ..	600	1,500	600	1,500
Limestone ... ..	27,000	637,500	32,400	765,600
Marble ... ..	—	—	375	75,000
Onyx ... ..	294	83,790	150	40,000
Plaster and Cement... ..	34,740	659,930	35,500	721,500
Phosphate of lime ... ..	265,000	5,300,000	305,174	6,103,480
Sand and gravel ... ..	86,727	94,352	72,180	72,180
Stone for building ... ..	798,560	1,843,606	888,300	1,848,300
„ (rough and broken) ... ..	1,436,250	1,413,750	1,415,000	1,388,000
Total Value in Francs ... ..	—	10,546,018	—	11,553,135
„ „ £ sterling ... ..	—	421,841	—	462,125

Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1901, and pour l'année 1902.

ALGERIA—continued.

TABLE 385.  
DEATHS from ACCIDENTS during the Years 1901 and 1902.\*

Kind of Working.	1901.		1902.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines... ..	3	1·10	3	·99
Underground Quarries ... ..	2	2·00	3	3·00
Open Quarries ... ..	3	0·99	14	4·26
Total ... ..	8	1·18	20	2·74

Annam. (See INDO-CHINA.)

Arabia.

The Arab is not a miner by nature, and there is little or no working for minerals on the great Arabian peninsula. In days gone by, according to Burton, gold mines were worked in the land of Midian.

Argentine Republic.

All writers seem to agree that the mineral resources of the Argentine Republic are great†; little, however, has been done to develop them. In addition to the ores of copper, gold, iron, lead, mercury, nickel, and silver, the Republic can produce asbestos, borax, coal, nitrate of soda, petroleum, salt, and sulphur. As railways are extended to the Andes, bringing facilities for working, the mining industry is sure to progress rapidly.

Gold dredging has not yet passed the prospecting stage.‡  
Unfortunately the National Department of Mines and Geology at Buenos Aires is unable to supply any statistics. The figures in the table below have, therefore, no official sanction.  
Large quantities of salt are obtained from the brine of a huge salt lake near San Blas, some 800 miles south of Buenos Ayres. The output at the present time is 25,000 tons a year.†

TABLE 386.  
QUANTITY and VALUE of COPPER, GOLD, and SILVER produced during the Years 1901 and 1902.

Metal.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
Copper (fine) ...	Metric Tons. 793§	£ 52,013¶	Metric Tons. 244§	£ 12,632¶
Gold ... ..	Kilos 45	6,160	††	—
Silver ... ..	Kilos. 1,405	5,565**	††	—

\* *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1901, and pour l'année 1902.*  
† "Mineral Resources of the Argentine Republic," by James McKean Rowbotham, A.M.I.C.E. *Proc. Inst. C. E.*, Vol. CXXVIII., 1896-7, Part II.  
‡ Consul Ross, "Trade of Consular District of Buenos Ayres for the years 1901 and 1902." *Dipl. and Cons. Reports*, No. 2,767, Ann. Series [Cd. 786-71], p. 8, and No. 2961 [Cd. 1386-38].  
§ Return compiled by Henry R. Merton and Co., Ltd., London.  
¶ *Report of the Director of the United States Mint for 1902.*  
\*\* Value of foreign copper in London market.  
\*\*\* Commercial value of fine silver.  
†† Figures not available.



## Aruba. (See DUTCH WEST INDIES.)

## Austria-Hungary.\*

As the Governments of Austria and Hungary publish separate official statistics, it has been thought advisable to maintain the distinction in the tables which follow. Further, it is convenient to refer to Bosnia and Herzegovina in this place, as these countries are administered by the common Ministry of Finance of Austria-Hungary, though not incorporated with the Empire.

*Brown Coal.*†—Most of the provinces of Austria proper yield brown coal, but Bohemia is by far the largest producer, with an output in 1902 of 18,262,592 tons. The principal workings for brown coal are in the Taplitz basin, where the seams often reach a thickness of 98½ feet (30 m.). These are of Lower Miocene age, and there are likewise seams of 3 feet thick of Upper Oligocene age which are worth working.

Styria, next in importance after Bohemia, produced about 2½ million tons of brown coal in 1902. The deposits are of Miocene age. Seams 50 feet to 100 feet in thickness (16 m. to 30 m.) are not uncommon, and in one place a seam is nearly 200 feet (60 m.) thick.

The principal brown coal mines in Hungary are situated in the counties of Nógrád, Borsod, and Hunyad.

*Coal.*†—Austria proper has two great sources of coal supply: (a) Part of the great Moravian-Silesian-Polish basin, which it shares with Prussia and Russia; (b) North-Eastern Bohemia.

(a.) The provinces of Moravia, Silesia, and Galicia furnished 64 per cent. of all the coal of Austria proper in 1902; the coal mining industry is most largely developed in the Ostrau-Karwin district of Silesia, where there are 25 workable coal seams making up a total thickness of 72 feet (22 m.) of coal. Some of it is made into excellent coke.

(b.) In 1902 Bohemia supplied 34 per cent. of all the coal of Austria proper. The main seam of the Kladno-Rahonitz basin is 20 feet to 36 feet thick.

Though the deposits are of comparatively little importance commercially, it is interesting from a geological point of view to note the fact that true coal is being worked in Austria in several of the subdivisions of the secondary rocks. Thus in Lower Austria coal is obtained from seams of Triassic, Liassic, and Upper Cretaceous age, and a coal of Cretaceous age is being mined in North-Western Moravia.

The principal coal regions of Hungary are in the counties Krassó-Szöreny and Baranya.

*Gold.*—The bulk of the gold comes from mines in Hungary, and especially from the mineral region of Zalatna and from the neighbourhood of Nagybánya in the county of Szatmár.

*Iron Ore.*—Austria on the contrary is the chief producer of iron. Among the Austrian provinces, Styria takes the first place with about 60 per cent. of the output, next comes Bohemia with 35 per cent. The production of iron in Hungary is increasing, and the ores of this metal are worked in very many parts of the Kingdom, especially in the northern counties of Gömör and Szepes, and in the north-eastern counties of Krassó-Szöreny and Hunyad.

*Lead Ore.*—A large proportion of the Austrian lead ore comes from Carinthia.

*Mercury.*—The famous quicksilver mine at Idria in Carniola has now been worked for upwards of five centuries; since 1580 it has belonged to the State. A little mercury is obtained from Hungary, and the metal has recently been discovered in Dalmatia.‡

\* *Exposition Universelle de 1900, Paris: Catalogue Spécial de la Hongrie*, Budapest, 1900, p. 203; *Weltausstellung, Paris, 1900; Katalog der Oesterreichischen Abtheilung*, Heft 7, Gruppe xi., Bergwesen, Vienna, 1900. Remenyik, *Les Mines de Métaux de Hongrie*, Budapest, 1900. Edvi-Ilés, *L'Industrie des Mines de Fer et Hauts-fourneaux de Hongrie*, Budapest, 1900. Déry, *Les Charbonnages Hongrois*, Budapest, 1900.

† *Die Mineralkohlen Oesterreichs*, Vienna, 1903.

‡ Churchill, "Report on the Trade and Commerce of Trieste for the year 1901." *Dipl. and Cons. Reports*, No. 2762, Annual Series, London, 1902, p. 12.

AUSTRIA-HUNGARY—continued.

*Opal.*—The celebrated opal mines of Hungary are situated at Dubnik in the county of Sáros; they are worked by the State. The annual output is 10 to 12,000 carats.

*Ozokerite and Petroleum.*—Galicia is remarkable for two important products, mineral wax and mineral oil. The principal workings for the former are at Boryslaw in the Drohobycz district, which likewise has the most productive oil-wells.

*Salt.*—Both in Austria and in Hungary the salt trade is a Government monopoly. Rock salt is obtained at Wieliczka in Galicia and in the county of Máramaros in Hungary, and in Transylvania; saliferous marl is treated by the lixiviation process in the Austrian Alps. On the shores of the Adriatic salt is extracted by solar evaporation from sea water.

*Silver.*—Bohemia and Hungary both produce silver. The Przibram mines in the former country have long been celebrated, not only as large producers of silver and lead, but also on account of their great depth.

AUSTRIA.

TABLE 387.

PERSONS EMPLOYED at MINES, arranged according to PROVINCE in which Employed, during the Years 1901\* and 1902.†

Province.	Persons Employed.			
	1901.		1902.	
	Total.	Percentage of the Total Number.	Total.	Percentage of the Total Number.
Austria, Lower ... ..	1,025	0·69	973	0·69
„ Upper ... ..	1,691	1·14	1,587	1·13
Bohemia ... ..	68,314	45·99	64,633	45·88
Bukowina ... ..	103	0·07	168	0·12
Carinthia ... ..	4,132	2·78	4,165	2·96
Carniola ... ..	2,857	1·92	2,575	1·83
Dalmatia ... ..	763	0·51	838	0·59
Galicia ... ..	5,262	3·54	4,798	3·41
Istria ... ..	1,171	0·79	1,191	0·85
Moravia ... ..	12,886	8·68	11,923	8·46
Salzburg ... ..	552	·37	517	0·37
Silesia... ..	31,114	20·95	29,780	21·14
Styria ... ..	17,580	11·83	16,583	11·77
Tirol ... ..	1,102	·74	1,128	0·80
Vorarlberg ... ..	1	0·00	1	0·00
Total ... ..	148,553	100·00	140,860	100·00

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1901, Vienna, Part II., No. 2, p. 146.  
† Do. do. do. 1902, Vienna, Part II., No. 2, p. 164.



AUSTRIA—continued.

TABLE 388.

PERSONS EMPLOYED at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1901 and 1902.\*

Year.	Coal.						Brown Coal.						Iron Ore.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.
1901 ..	143	61,786	3,412	5,146	—	70,344	254	55,841	2,571	1,178	1	59,591	37	5,806	91	174	—	5,871
1902 ..	139	59,133	2,975	4,474	—	66,582	245	52,761	2,280	1,226	2	56,269	38	5,011	108	239	—	5,358

TABLE 388—continued.

Year.	Other Mines.						All the Mines.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	General Total.
1901 .. .. .	100	11,314	831	587	15	12,747	534	134,547	6,905	7,085	16	148,553
1902 .. .. .	98	11,094	872	670	15	12,651	520	127,989	6,235	6,609	17	140,800

TABLE 389.

PERSONS EMPLOYED at SALT MINES and WORKS during the Years 1901 and 1902.†

Country or Province.	Salt Mines.			Brine Evaporating Works and Sea Salt Works.					Total at Salt Mines and Works.				
	Men.	Young Persons.	Total.	Men.	Women.	Young Persons.	Children.	Total.	Men.	Women.	Young Persons.	Children.	Total.
Upper Austria ..	408	2	410	930	16	1	—	947	1,338	16	3	—	1,357
Salzburg .. ..	192	—	192	187	3	—	—	190	379	3	—	—	382
Bukowina .. ..	40	—	40	44	—	—	—	44	84	—	—	—	84
Styria .. .. .	109	—	109	350	4	—	—	354	459	4	—	—	463
Tyrol .. .. .	131	—	131	129	—	—	—	129	280	—	—	—	280
Dalmatia .. ..	—	—	—	1,450	392	—	19	1,831	1,450	392	—	89	1,931
Istria .. .. .	—	—	—	653	450	77	40	1,220	663	450	77	40	1,220
Galicia .. .. .	1,632	—	1,632	634	—	—	—	634	2,266	—	—	—	2,266
Totals for 1902 ..	2,512	2	2,514	4,377	865	78	129	5,449	6,889	865	80	129	7,963
Totals for 1901 ..	2,426	2	2,428	4,236	880	291	187	5,574	6,662	880	293	187	8,002

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1902, Vienna, Part II., No. 2, pp. 166-169.  
† Do. do. do. do. do. p. 179.

AUSTRIA—continued.

TABLE 390.

PERSONS EMPLOYED at OZOKERITE MINES and PETROLEUM WELLS during the Years 1901 and 1902.\*

Province.	Kind of Workings.	1901.				1902.			
		Persons Employed.				Persons Employed.			
		Men.	Women.	Young Persons.	Total.	Men.	Women.	Young Persons.	Total.
Galicia...	Ozokerite ...	2,569	74	17	2,660	2,517	69	24	2,610
.. ..	Petroleum ...	5,776	4	7	5,787	5,878	5	6	5,889

TABLE 391.

QUANTITY and VALUE of MINERALS produced from MINES, exclusive of SALT, OZOKERITE, and PETROLEUM, during the Years 1901 and 1902.†

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum shale and vitriol ore ...	2,551	19,580	2,866	18,060
Antimony ore ... ..	126	22,785	18	3,271
Asphalt ... ..	541	38,710	897	40,720
Bismuth ore ... ..	16	20,000	7	11,305
Brown coal ... ..	22,473,509	125,187,561	22,139,683	109,334,380
Coal ... ..	11,738,840	109,656,605	11,045,039	96,900,125
Copper ore... ..	7,406	596,207	8,455	536,672
Gold ore‡ ... ..	143	31,814	74	21,140
Graphite ... ..	29,991	1,818,509	29,527	1,813,726
Iron ore ... ..	1,963,246	11,552,141	1,744,298	14,422,005
Lead ore ... ..	16,688	2,744,049	19,055	2,661,658
Manganese ore ... ..	7,796	127,331	5,646	97,607
Quicksilver ore ... ..	97,360	1,963,524	90,040	2,127,427
Silver ore§ ... ..	21,363	3,657,436	22,288	3,038,774
Sulphur ore ... ..	4,911	60,535	3,721	89,266
Tin ore ... ..	42	7,527	47	8,883
Tungsten ore ... ..	45	53,745	45	34,246
Uranium ore ... ..	48	188,270	44	189,633
Zinc ore ... ..	36,072	1,735,753	31,927	1,617,734
Total value in crowns ...	—	259,482,082	—	232,966,632
„ „ £ sterling ...	—	£10,802,751	—	£9,698,861

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1902, Vienna, Part II., No. 2, pp. 287 and 288.  
† Do. do. do. do. do. No. 1.  
‡ 47 kilos of fine gold were obtained at the Metallurgical Works in 1901, and 7 kilos. in 1902.  
§ 40,205 kilos. of fine silver were obtained at the Metallurgical Works in 1901, and 39,544 kilos. in 1902.



## AUSTRIA—continued

TABLE 392.

QUANTITY and VALUE of SALT produced during the Years 1901 and 1902.\*

Province.	Rock Salt.	Salt from Brine.	Sea Salt.	Industrial Salt.	Value reckoned according to the Monopoly Prices.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Crowns.
Upper Austria ... ..	311	66,315	—	18,335	14,680,855
Salzburg ... ..	7	17,559	—	4,591	3,406,127
Bukowina ... ..	1,190	4,074	—	120	947,620
Styria... ..	2,014	14,864	—	2,398	3,341,648
Tyrol ... ..	23	13,257	—	1,239	2,217,792
Dalmatia ... ..	—	—	7,278	—	706,060
Istria ... ..	—	—	31,234	—	4,896,304
Galicia ... ..	28,911	50,089	—	46,998	16,459,661
Total for 1902 ...	32,456	166,158	38,512	73,681	46,656,067 £1,942,384
„ 1901 ...	40,199	175,602	40,723	76,613	49,441,153 £2,058,333

TABLE 393.

QUANTITY and VALUE of OZOKERITE and PETROLEUM produced during the Years 1901 and 1902.†

Province.	Mineral.	1901.		1902.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	Crowns.	Metric Tons.	Crowns.
Galicia ... ..	Ozokerite ... ..	2,707	2,572,448	2,655	2,922,362
„ ... ..	Petroleum ... ..	404,662	23,010,589	520,847	14,676,651
	Total value in crowns	—	25,583,037	—	17,599,013
	„ £ sterling	—	£1,065,072	—	£732,682

\* Statistisches der k. k. Ackerbau-Ministeriums for 1902, Vienna, Part II., No. 1, pp. 200 and 201.

† Do. do. do. do. No. 2, pp. 287 and 288.

AUSTRIA—continued.

TABLE 394.

ACCIDENTS at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1901 and 1902.\*

Kind of Mines.	1902.			
	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
Coal (bituminous) ... ..	72	376	1·08	153,403
Brown coal ... ..	124	576	2·20	178,546
Iron ore ... ..	12	31	2·24	145,358
Other mines (excluding salt and ozokerite mines, and petroleum wells).	7	71	0·55	30,665
Total for 1902 ... ..	215	1,054	1·53	162,852
„ preceding year ... ..	199	1,020	1·34	183,121

TABLE 395.

ACCIDENTS at SALT MINES during the Years 1901 and 1902.\*

Year.	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
1901	—	8	—	—
1902	1	16	0·40	32,456

TABLE 396.

ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS during the Years 1901 and 1902.†

Kind of Workings.	1901.			1902.		
	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.
Ozokerite ... ..	5	14	1·88	20	6	7·66
Petroleum ... ..	4	62	0·69	10	93	1·70

The accidents have been classified according to mineral worked, place, and cause.

\* Statistisches des k. k. Ackerbau-Ministeriums for 1902, Vienna, Part II., No. 2, pp. 195, 205 and 213.  
† Do. do. do. do. pp. 301-304.



## AUSTRIA—continued.

TABLE 397.

DEATHS classified according to the MINERAL worked, and the PLACE of the ACCIDENT, during the Years 1901 and 1902.\*

Place of Accident.	Coal.	Brown Coal.	Iron Ore.	Rock Salt.	Other Minerals.	Total.
In perpendicular shafts ...	20	8	2	1	1	32
On inclined planes ...	4	5	—	—	1	10
In levels ...	13	62	5	—	—	80
At the working face ...	22	28	3	—	3	56
Above ground ...	13	21	2	—	2	38
Total for 1902 ...	72	124	12	1	7	216
„ preceding year ...	84	97	8	—	10	199

TABLE 398.

DEATHS from ACCIDENTS, arranged according to MINERAL worked and PLACE where they happened, during the Years 1901 and 1902.†

Kind of Mines.	Percentage of Deaths.					
	Perpendicular Shafts.	Inclined Planes.	Levels.	At the Working Face.	Above-ground.	Total.
Coal ...	9·26	1·85	6·02	10·18	6·02	33·33
Brown coal ...	3·70	2·32	28·71	12·96	9·72	57·41
Iron ...	0·93	—	2·31	1·39	0·93	5·56
Rock salt ...	0·46	—	—	—	—	0·46
Other mines ...	0·46	0·46	—	1·39	0·93	3·24
Total for 1902 ...	14·81	4·63	37·04	25·92	17·60	100·00
„ preceding year	19·60	5·02	16·08	37·69	21·61	100·00

\* *Statistisches Jahrbuch des k. k. Ackerbau Ministeriums für 1902*, Vienna, Part II., No. 2, pp. 200–205.

† Do. do. do. do. do. p. 196.

AUSTRIA—continued.

TABLE 399.

DEATHS classified according to CAUSE of ACCIDENT in MINES (exclusive of WORKINGS for OZOKERITE and PETROLEUM) during the Years 1901 and 1902.\*

Cause of Accident.	Number of Persons killed.		Increase or Decrease.
	1901.	1902.	
By falls of roof ... ..	38	27	— 11
„ haulage or winding appliances ...	43	24	— 19
„ stones or things falling down ...	39	45	+ 6
„ machines or tools ... ..	7	6	— 1
„ falling down ... ..	32	17	— 15
„ firedamp explosions ... ..	2	6	+ 4
„ ignitions of inflammable gas ...	—	—	=
„ suffocation ... ..	10	—	— 10
„ coal, stone, &c., falling or sliding down above ground.	5	1	— 4
„ travelling in cage or climbing ladders	2	5	+ 3
„ blasting ... ..	4	5	+ 1
While undercutting (holing) ... ..	4	2	— 2
„ timbering or walling ... ..	4	—	— 4
By irruption of water ... ..	—	60	+ 60
„ other causes ... ..	9	18	+ 9
Total ... ..	199	216	+ 17

The preceding tables show that in the mines of Austria proper (exclusive of workings for ozokerite and petroleum) there were 216 deaths from accidents, or 17 more than in 1901.

The accidents at the ozokerite and petroleum workings separately were as follows :—

TABLE 400.

NUMBER of DEATHS and of PERSONS seriously injured by ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS, classified according to the PLACE where the ACCIDENT happened, during the Year 1902, and total for the preceding year.†

Place of Accident.	Number of Deaths from Accidents.	Number of Persons seriously injured.
In vertical shafts ... ..	1	2
In sinks and rises ... ..	—	—
In levels ... ..	18	3
At the working face ... ..	—	—
On surface ... ..	11	94
Total for 1902 ... ..	30	99
„ preceding year	9	76

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1902, Vienna, Part II., No. 2, p. 197.  
† Do. do. do. do. do. pp. 301-304.

AUSTRIA—continued.

The two worst accidents of the year 1902 occurred at brown coal mines in the Brüz district, viz. :—

An irruption of surface water into Jupiter shaft, which caused the death of the manager, three other officials, and 39 miners, in all 43 persons.\*

An explosion of gases, generated by an underground fire, while workmen were engaged in endeavouring to extinguish it, which caused the loss of 13 lives.

In the year 1902 there were only 8 explosions of firedamp in mines in Austria ; they caused the death of 24 persons and serious injuries to 8. Of these 8 explosions, 6 happened in a coal mine, 1 in a brown coal mine, and 1 in an ozokerite mine.

TABLE 401.

Separate EXPLOSIONS of FIREDAMP or COAL DUST, arranged according to kind of MINES or other MINERAL WORKINGS, and cause of ACCIDENT during the Year 1902.†

Cause.	Coal.	Brown Coal.	Salt.	Ozokerite Mines and Petroleum Wells.	Total.
1. Naked lights ... ..	4	—	—	—	4
2. Flame of safety lamp driven through gauze.	1	—	—	1	2
3. Ignition of gas by underground fire	—	1	—	—	1
4. Unknown ... ..	1	—	—	—	1
	6	1	—	1	8

Much attention is paid in Austria to the means of rescuing possible survivors after accidents by explosions or underground fires. In the Ostrau-Karwin district,‡ where nearly forty thousand persons are employed, every mining undertaking has a rescue station provided with apparatus for breathing in poisonous or irrespirable atmospheres, electric lamps, and other rescue appliances. No less than 807 of these breathing apparatuses are in readiness, as shown by the following table :—

Type of Apparatus.	Number.
Newpert-Mayer ... ..	138
Walcher-gärtner ... ..	500
Shamrock ... ..	151
Bremen ... ..	13
Divers ... ..	5
Total ... ..	807

Special men have been told off as rescuers, and they now number about eighteen hundred.

\* Okorn, "Der Wassereinbruch am Jupiterschachte in Kommern (Böhmen) am 14 Jänner, 1902," *B- u. h. Jahrbuch*, Vienna, 1903, Vol. LI., p. 72.  
† *Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1902*, Vienna, Part II., No. 2, p. 314.  
‡ *Die Mineralkohlen Oesterreichs*. Vienna, 1903, p. 385.  
Fillunger "Bericht über die Zulässigkeit von Rettungs- oder Atmungsapparaten" *Mitteilungen des ständigen Komitees zur Untersuchung von Schlagwetterfragen in Wien*. Vienna, 1902, p. 10.



## BOHEMIA.

As Bohemia employs such a large proportion of the miners in Austria, details concerning this province have been extracted from the official reports.

TABLE 402.

PERSONS EMPLOYED at the various classes of MINES in BOHEMIA during the Years 1901 and 1902.\*

Kind of Mines.	Men.	Women.	Young Persons.	Children.	Total.	Percentage of Total Number of Persons Employed.
Coal ... ..	18,844	1,096	1,563	—	21,503	33·27
Brown coal ... ..	34,434	1,060	580	—	36,074	55·81
Iron ore ... ..	1,308	—	18	—	1,326	2·05
Other minerals ... ..	5,446	131	153	—	5,730	8·87
Total for 1902 ... ..	60,032	2,287	2,314	—	64,633	100·00
„ preceding year	62,890	2,631	2,793	—	68,314	100·00

TABLE 403.

DEATHS at MINES during the Years 1901 and 1902.†

Kind of Mines.	Number of Deaths from Accidents.	Average Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral produced per Death by Accident.
Coal ... ..	22	1·02	173,081
Brown coal ... ..	112	3·10	163,059
Iron ore ... ..	6	4·52	101,250
Other minerals ... ..	1	·17	44,700
Total for 1902 ... ..	141	2·18	161,153
„ preceding year	112	1·64	205,971

## HUNGARY.

TABLE 404.

PERSONS EMPLOYED at all MINES (including SALT MINES) and SMELTING WORKS during the Years 1901‡ and 1902.§

Year.	Men.	Women.	Children.	Total.
1901 ... ..	66,679	1,767	6,779	75,225
1902 ... ..	65,813	1,654	6,246	73,713

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1902, Vienna, Part II., No. 2, p. 139.

† Do. do. do. do. do. pp. 180 and 181. Also included with Austria in table on page 367.

‡ Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évkönyv*, New Series IX., 1901, Budapest, p. 119.

§ Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évkönyv*, New Series X., 1902.

HUNGARY—continued.

TABLE 405.

QUANTITY and VALUE of MINERALS and METALS produced in 1901\* and 1902.†

Mineral, Metal, or Product.	1901.		1902.	
	Quantity.	Value, Unit = 1,000 Cms.	Quantity.	Value, Unit = 1,000 Cms.
	Metric Tons.		Metric Tons.	
Antimony ore ... ..	1,691	97·5	200	16·2
Antimony, crude, and regulus ...	705	414·6	683	400·1
Asphalt ... ..	2,878	302·0	2,774	292·4
Auriferous and argentiferous lead and copper ore.	121,970	2,933·9	114,300	2,466·1
Auriferous silver ore ... ..	773	243·2	863	310·5
Bismuth ore ... ..	32	20·9	15	12·5
Briquettes ... ..	40,183	659·7	88,069	1,293·1
Brown coal ... ..	5,179,829	33,994·7	5,132,053	33,607·5
Coal ... ..	1,365,717	14,580·6	1,162,785	13,055·4
Copper ore ... ..	693	72·4	498	58·7
Gold ore (washed) .. ..	6,859‡	973·6	5,655§	892·6
Iron ore ... ..	1,557,300	8,463·1	1,451,482	7,704·7
Iron pyrites ... ..	93,907	752·4	106,490	988·2
Iron vitriol ... ..	805	12·9	909	15·5
Lead ore... ..	3,720	721·7	4,030	697·3
Manganese ore ... ..	4,591	35·8	7,237	67·5
Petroleum ... ..	3,296	190·3	4,347	208·8
Quicksilver ore... ..	No Returns	—	—	—
Salt ... ..	211,321	32,283·0	211,679	32,516·0
Silver ore ... ..	861‡	128·0	157§	24·1
Sulphur ... ..	137	19·2	105	14·5
Total value in Crowns ... ..	—	96,897·5	—	94,641·7
“ “ £ sterling ... ..	—	£4,037,479	—	£3,943,404

TABLE 406.

DEATHS at all MINES (including SALT MINES and SMELTING WORKS) during the Years 1901|| and 1902.¶

Year.	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.
1901 ... ..	107	317	1·43
1902 ... ..	114	292	1·55
Comparison between 1901 and 1902	+ 7	— 25	+ 0·12

\* Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évkönyv*, New Series IX., 1901, Budapest, 1903, pp. 123–126.  
† Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évkönyv*, New Series X., 1902, Budapest, pp. 145–148.  
‡ 3,293 kilos. of fine gold and 23,634 kilos. of fine silver were obtained at the Metallurgical Works in 1901.  
§ 3,400 kilos. of fine gold and 23,020 kilos. of fine silver were obtained at the Metallurgical Works in 1902.  
|| Official Return furnished by the Central Statistical Office, Budapest, and published in *Magyar Statisztikai Évkönyv*, New Series IX., 1901, Budapest, 1903, p. 122.  
¶ Official Return furnished by the Central Statistical Office, Budapest, and published in *Magyar Statisztikai Évkönyv*, New Series X., 1902, Budapest, 1904, p. 144.



## BOSNIA AND HERZEGOVINA.\*

According to Consul-General Freeman† mining has been very prosperous, and the number of persons employed has increased considerably. Brown coal, iron ore, and salt are the chief mineral products. Other minerals known to exist are the ores of antimony, arsenic, chromium, copper, gold, lead, manganese, quicksilver, and zinc; besides asbestos, asphalt, magnesite, and petroleum.

*Brown Coal.*—The principal collieries are at Zenica and Kreka; they are worked by the State. The most important seams are respectively 33 feet (10 metres) and 52½ feet (16 metres) thick. The coal is of Tertiary age. Coal-mining is a new industry, for it dates back only as far as 1880; 500 tons were raised in that year, whilst in 1902 the total output had risen to 424,753 tons, of which Zenica colliery produced 139,820 tons and Kreka colliery 230,865 tons. Some is exported to towns on the Adriatic. New coal mines have been opened at Kakanj-Doboj, near the Brodserajevo railway, and the total output of the country increased 6 per cent. in 1901. The quantity obtained from the latter mines in 1902 was 40,030 tons.

*Chromic Iron.*—A large Viennese company has chromium mines at Dubostica.

*Copper Ore.*—The ores of this metal are mined and smelted at Sinjako.

*Iron Ore.*—The ironworks at Varès under Government auspices are very successful, and the country's output of iron ore in 1902 was 132,626 metric tons.

*Salt.*—The extraction of salt from natural brine springs dates back, at least, to Roman times, and probably very much further. As in the Austro-Hungarian Empire, the industry is a State monopoly. Numerous borings have proved that the deposits near Dolnja Tuzla are capable of yielding an ample supply of brine in the future, to say nothing of rock salt. Some of the brine from Dolnja Tuzla is piped 6 miles to Lukavac, and there made into soda by the ammonia process.

TABLE 407.

PERSONS EMPLOYED at MINES and SALT WORKS during the Years 1901 and 1902.

Year.	Coal Mines.	Iron Mines.	Other Mines.	Salt Works.
1901	1,478	311	362	237
1902	1,578	348	428	216

TABLE 408.

QUANTITY and VALUE of MINERAL produced during the Years 1901 and 1902.

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Brown coal ... ..	445,007	1,883,807	424,753	1,882,829
Chrome ore ... ..	505	35,322	270	14,839
Copper ore ... ..	4,737†	55,939	4,711‡	63,418

\* Official Return furnished by the "Bosn.-herz., Montanbureau," and published in the *Oesterreichische Zeitschrift für Berg- und Hüttenwesen*, LI. Jahrgang, 1903.

† 1,941 tons of this quantity were Fahlors.

‡ 1,054

16085



BOSNIA AND HERZEGOVINA—*continued.*TABLE 408—*continued.*QUANTITY and VALUE of MINERAL produced during the Years 1901  
and 1902—*continued.*

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Iron ore ... ..	122,569	514,789	133,348	525,183
Iron pyrites ... ..	4,570	180,000	5,170	103,400
Manganese ore ... ..	6,346	247,498	5,760	172,791
Salt (Brine) ... (hectolitres)	1,558,581*	124,686	1,632,322†	130,580
Total value in Crowns	—	3,042,041	—	2,893,040
Total value in £ sterling	—	£126,646	—	£120,443

TABLE 409.

DEATHS at MINES during the Years 1901 and 1902.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
Brown Coal...	2	—	2	—	—	—	2	1·27
Iron ... ..	—	—	—	—	—	—	—	—
Other ... ..	—	—	—	—	—	—	—	—
Total for 1902.	2	—	2	—	—	—	2	·85
Total for preceding year.	8	—	8	—	—	—	8	3·72

Banca and Billiton. (See DUTCH EAST INDIES.)

Bavaria. (See GERMAN EMPIRE.)

\* Containing 17,019 metric tons of salt.  
† " 12,348 " "

## Belgium.

Coal mining is the most important mineral industry in Belgium ; the ore mines are of little note, but the quarries of various kinds of stone have an output of considerable value.

*Coal.*—There are five coal-mining regions known respectively as the Couchant de Mons, Centre, Charleroi, Namur, and Liège. Of these the Charleroi region is the most productive, for it yields more than one-third of all the coal of Belgium.

The total output of coal in 1902 was 22,877,470 metric tons ; this amount exceeds that of the previous year by 664,060 tons or nearly 3 %, but is less by 585,347 tons than the yield of 1900 which is the maximum hitherto recorded.

Important discoveries of coal have been made by borings to the North and North East of Hasselt,\* and it has been already ascertained that the new basin extends over an area of some 400 square miles ; it is hoped that it will continue as far to the West as Antwerp. Numerous borings have proved a total thickness of 33 feet (10 metres) of coal.

There are 45 coking plants at work, which produced 2,048,070 tons of coke, besides 40 factories which produced 1,616,520 tons of briquettes.

The workings for mineral in Belgium are classified in the official statistics under three heads : (1) Coal Mines ; (2) Ore Mines ; (3) Quarries.

TABLE 410.

## PERSONS EMPLOYED.†

Kind of Workings.	1901.			1902.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal Mines ... ..	98,815	35,277	134,092	98,600	36,289	134,889
Ore Mines... ..	507	689	1,196	399	461	860
Quarries (Open and Under-ground) ... ..	—	—	37,260	—	—	36,469
Total ... ..	—	—	172,548	—	—	172,218

\* Lambert. *Le Grand bassin houiller et les nouvelles richesses minérales du Nord de la Belgique et du Sud de la Hollande.* Brussels. 1902.

Stainier. "Etudes sur le bassin houiller du Nord de la Belgique." *Bull. Soc. Belge de Géologie.* Brussels, Vol. XVI., 1902, p. 77 and "Etat des Recherches dans le bassin houiller de la Campine," *Soc. Belge de Géologie*, 16 December, 1902.

Harzé. "Le bassin houiller du Nord de la Belgique." *Soc. Belge des Ingénieurs et des Industriels*, 1902.

† *Statistique des Industries Extractives et Métallurgiques et des Appareils à Vapeur en Belgique pour l'année 1901 an. l'année 1902*, published in the *Annales des Mines de Belgique*, Vol. VIII. Brussels.

BELGIUM—*continued.*

TABLE 411.

PERSONS EMPLOYED at COAL MINES during the Years 1901 and 1902.\*

Year.	Under-ground.							Above-ground.							Total Under-ground and Above-ground.
	Males.			Females.			Total.	Males.			Females.			Total.	
	Ages.			Ages.				Ages.			Ages.				
	12 to 14.	14 to 16.	Above 16.	14 to 16.	16 to 21.	Above 21.		12 to 14.	14 to 16.	Above 16.	12 to 16.	16 to 21.	Above 21.		
1901 ...	2,169	4,546	91,980	—	—	120	98,815	1,252	1,498	24,932	2,469	3,758	1,368	35,277	134,092
1902 ...	2,261	4,604	91,651	—	—	84	98,600	1,389	1,489	25,659	2,609	3,669	1,474	36,289	134,889

The average output per underground worker was only 232 metric tons in the year 1902, compared with 355 in this country; the reason of this is the small size of the seams, which on an average are only 2 feet 2·7 inches (68 c.m.) thick.

It is evident from Table 412 that within a few years female labour below-ground will become a thing of the past in Belgium. Thirty years ago, from 8,000 to 9,000 girls and women were employed in the Belgian Collieries below-ground.†

TABLE 412.

FEMALES employed BELOW-GROUND at MINES in the Years 1891–1902.

Year.	Under 16 Years.	16 to 21 Years.	Above 21 Years.	Total.
1891 ... ..	683	2,285	723	3,691
1892 ... ..	219	1,957	719	2,895
1893 ... ..	44	1,505	623	2,172
1894 ... ..	—	1,076	542	1,618
1895 ... ..	—	673	595	1,268
1896 ... ..	—	291	597	888
1897 ... ..	—	87	549	636
1898 ... ..	—	19	405	424
1899 ... ..	—	—	289	289
1900 ... ..	—	—	191	191
1901 ... ..	—	—	120	120
1902 ... ..	—	—	84	84

\* *Statistique des Industries Extractives et Métallurgiques et des Appareils à Vapeur en Belgique pour l'année 1902*, p. 11.  
† Harzé. *Annales des Mines de Belgique*, Vol. VI., Brussels, 1901, pp. 603–605.



## BELGIUM—continued.

TABLE 413.

## COAL MINES.

PARTICULARS CONCERNING COAL SEAMS, OUTPUT OF COLLIERIES, and WAGES for the Year 1902.\*

District.	Mean thickness of Coal Seams.	Number of Days Coal was wound.		Total Output.	Total Number of Square Metres worked.	Output per Square Metre worked.	Annual Output.			Total Number of Days worked.	Wages.		Average Daily Wage.											
		Average per Group of Collieries.	Total per Colliery.				Metric Tons.	Metric Tons.	Tons.		Tons.	Per Worker at the Face.	Per Underground Worker.	Per Worker Under and Above ground.	Gross.	Net.	Per Worker Underground Worker.		Per Worker Above-ground.		Per Worker Under and Above-ground.		Per Worker at the Face.	
																	Gross.	Net.	Gross.	Net.	Gross.	Net.	Gross.	Net.
Mons ...	58	284	292	4,425,850	5,756,630	763	722	190	144	9,039,975	Francs.	Francs.	Fr.	Fr.	2.68	2.65	3.55	3.51	Fr.	Fr.	4.25	4.19		
Centre ...	65	288	290	3,584,820	4,321,730	829	911	226	167	6,266,435	27,032,700	25,911,890	4.71	4.50	3.22	3.12	4.31	4.14	5.61	5.43				
Charleroi ...	74	288	292	7,876,300	8,285,950	950	1,022	254	177	13,026,900	55,884,350	55,091,230	4.84	4.75	3.04	3.04	4.29	4.23	5.43	5.37				
Namur ...	85	278	282	754,040	653,250	1,150	1,160	293	207	1,072,100	4,657,650	4,629,580	4.89	4.86	3.03	3.02	4.34	4.32	5.33	5.29				
Liège ...	70	289	293	6,236,460	6,670,790	930	1,125	241	181	10,382,570	41,704,250	41,370,010	4.41	4.37	2.88	2.87	4.02	3.98	5.14	5.12				
Totals and Averages for 1902		287	291	22,877,470	25,688,350	890	954	232	170	39,787,980	161,403,410	158,709,780	4.47	4.39	2.96	2.93	4.06	3.99	5.09	5.02				

\* Statistique des Industries Extractives et Métallurgiques et des Appareils à vapeur en Belgique, pour l'année 1902.

## BELGIUM—continued.

TABLE 414.

QUANTITY and VALUE of MINERALS produced from MINES and QUARRIES\* for the Years 1901 and 1902.†

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
Barytes ... .. <i>Metric Tons</i>	22,800	Francs. 159,600	33,000	Francs. 231,000
Chalk ... .. <i>Cubic Metres</i>	449,000	533,050	390,700	538,150
China clay ... .. <i>Metric Tons</i>	2,640	28,400	500	5,000
Clay (other than } China Clay). } "	298,340	1,871,800	299,820	1,728,850
Coal ... .. "	22,213,410	338,274,090	22,877,470	302,027,860
Flint for earthenware... <i>Cubic Metres</i>	17,700	73,600	17,430	107,400
Iron ore ... .. <i>Metric Tons</i>	218,780	1,112,900	166,480	679,700
Lead ore... .. "	220	42,065	164	12,850
Lime ... .. <i>Cubic Metres</i>	1,497,250	10,257,410	1,626,670	10,695,770
Manganese ore ... .. "	8,510	110,800	14,440	187,300
Ochre ... .. <i>Metric Tons</i>	2,100	42,000	200	4,000
Phosphate of lime ... .. "	222,520	1,806,990	135,850	1,489,240
Phosphatic chalk ... <i>Cubic Metres</i>	191,100	1,360,200	315,200	1,414,600
Pyrites ... .. <i>Metric Tons</i>	560	1,960	710	3,200
Sand ... .. <i>Cubic Metres</i>	626,020	1,200,340	722,775	1,289,020
Slate ... .. } Number } Square Metres }	39,030,000	1,419,500	37,120,000	1,342,200
	14,800	70,930	20,615	90,640
Stone, &c. :—				
Building stone dressed <i>Cubic Metres</i>	198,380	14,622,920	238,924	16,124,970
Dolomite ... .. "	31,500	59,040	39,140	66,760
Flags ... .. <i>Square Metres</i>	106,470	602,470	81,330	613,680
Gravel and broken } stone. } <i>Cubic Metres</i>	7,860	42,780	7,705	28,600
Hone stones and } scythe stones. } <i>Number</i>	160,150	100,750	122,300	79,300
Limestone ... .. <i>Cubic Metres</i>	193,370	316,400	226,220	467,790
Marble ... .. "	15,390	2,569,550	15,490	2,542,550
Paving stone... .. <i>Number</i>	110,920,000	11,369,900	110,103,000	12,009,340
Rough and broken <i>Cubic Metres</i> stone.	2,254,630	5,367,050	2,481,195	5,807,800
Zinc ore... .. <i>Metric Tons</i>	6,645	273,325	3,852	190,520
Total value in Francs ... ..	—	393,689,820	—	359,778,090
" " £ sterling ... ..	—	15,747,593	—	14,391,124

\* Excluding the two Flanders and the Province of Antwerp, which only furnish Tertiary clays for making bricks and tiles, and sand used in making glass and for other purposes.

† *Statistique des Industries Extractives et Métallurgiques et des Appareils à Vapeur en Belgique, pour l'année 1901, and l'année 1902*, and published in the *Annales des Mines de Belgique*, vol. viii., Brussels.



## BELGIUM—continued.

TABLE 415.

NUMBER OF DEATHS FROM ACCIDENTS AT MINES AND QUARRIES during the Years 1901 and 1902.\*

Year.	Kind of Workings.	Under-ground.	Above-ground.	Total.	Number of Deaths per 1,000 Persons Employed.		
					Under-ground.	Above-ground.	Total.
1901	Coal mines	142	15	157	1.44	.43	1.02
"	Ore mines	—	—	2†	—	—	4.87
"	Quarries (open and underground).	—	—	6†	—	—	.16
1902	Coal mines	122	22	144	1.24	.61	1.07
"	Ore mines	—	—	—	—	—	—
"	Quarries (open and underground).	—	—	1†	—	—	.03

## Bohemia. (See AUSTRIA-HUNGARY.)

## Bolivia.†

Bolivia is remarkable as being the great silver-producing country of South America; it likewise yields antimony, bismuth, copper, gold, manganese, and tin, besides a little borax.

*Bismuth.*—This mineral is obtained from the Chorolque mines in the department of Potosi.

*Copper Ore.*—The copper ore of the Corocoro district is rich enough to pay heavy transport expenses to Mollendo (Peru), whence it is shipped to Europe.

*Gold.*—The precious metal is extracted from alluvial gravels, especially in the Eastern valleys of the Cordillera Real, in the upper branches of the La Paz river, and in valleys radiating from Mount Sorata. Veins of auriferous quartz are being worked with profit in the Araca Mountain, over against Illimani.

*Silver.*—The richness of the silver mines of the Potosi district has become proverbial; a few years ago more than one-half of the silver was produced by the Huanchaca mines.

*Tin Ore.*§—There are four tin-producing districts in Bolivia, viz., La Paz, Oruro, Potosi, and Chorolque; the tin ore is obtained chiefly from veins.

\* *Op. cit.*, pour l'année 1901 and l'année 1902.

† Not stated whether the accidents happened under-ground or above-ground.

‡ Consul St. John, "Trade, &c., of Bolivia for the year 1895." *Dipl. and Cons. Reports*, No. 1841; Ann. Ser., 1897 [C. 8277-59], Sir Martin Conway, "Some of the undeveloped resources of Bolivia." *Jour. Soc. Arts*, vol. xlviii., 1900, p. 236.

§ Pasley, "The Tin Mines of Bolivia." *Trans. Inst. M. and M.*, vol. vii., 1898-99, p. 77. Roberts, "Chorolque Tin Mines and Alluvial Deposits, Bolivia," *Ibidem*, vol. ix., 1900-01, p. 372; and Frochof "L'étain en Bolivie." *Annales des Mines*, vol. xix., 1901, p. 186.



## BOLIVIA—continued.

TABLE 416.

QUANTITY and VALUE of MINERALS produced and exported through the Port of Antofagasta during the Years 1901 and 1902.\*

Description of Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony ore ... ..	190	102,157	126	21,991
Bismuth ... ..	282	723,751	113	328,302
Borate of calcium ... ..	3,065	410,524	593	48,328
Borax ... ..	—	43	—	—
Cobalt ore ... ..	2	284	3	1,000
Copper, ingots ... ..	188	79,475	30	18,700
" precipitate ... ..	3	666	4	7,972
" matte ... ..	738	273,435	—	—
" ore ... ..	970	134,611	29	18,229
" and silver matte ... ..	210	126,000	—	4,050
Gold ... ..	Kilos. 8.4	12,795	Kilos. 1.5	2,700
Lead, silver ... ..	538	365,457	1,883	204,975
" " ore... ..	40	9,741	34	9,870
Silver ... ..	Kilos. 482	19,280	Kilos. 223	15,000
" ingots ... ..	" 6,483	354,228	" 12,172	531,797
" ore ... ..	37,315	19,924,112	66,068	9,981,035
" sulphide... ..	145	826,433	132	2,345,553
" and copper ore ... ..	18	4,948	8	8,310
Tin, ingots ... ..	14,932	6,864,716	16,779	16,589,316
" ore ... ..	14	675	14	8,395
Wolfram ... ..	13	10,477	53	46,760
Zinc ore... ..	—	—	8,587	981,500
Other minerals... ..	—	2,027	—	200
Total value in Dollars ... ..	—	30,245,835	—	31,173,983
" " £ sterling ... ..	—	£2,268,438	—	£2,338,049

In addition to the above, the following Bolivian mineral produce was exported through the Port of Mollendo in Peru† during the year 1902 :—Copper, 3,483 tons, £141,000 value ; Gold £2,380 value ; Silver ores, 44 tons, £909 value ; Tin, 428 tons, £13,500 value.

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Bonaire. (See DUTCH WEST INDIES.)

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Borneo. (See BRITISH BORNEO and DUTCH EAST INDIES.)

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Bosnia. (See AUSTRIA-HUNGARY.)

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Brazil.

The fact that Brazil produces gold and precious stones leads to the idea that it is an important mining country. No doubt its mineral resources are great ; but judged by the actual output they are not properly utilized. Capitalists and prospectors are discouraged by unsatisfactory mining legislation, which appears to be the main reason why the mining industry is at so low an ebb.‡ One great obstacle to its progress is the difficulty of satisfactorily registering title deeds.§ No official statistics are published by the Brazilian Government.

In addition to diamonds and gold, Brazil is yielding coal, iron ore, manganese ore, and monazite sand. Petroleum and the ores of copper and lead exist in workable quantities.

\* Official Return furnished by the "Sociedad de Fomento Fabril," Santiago, and *Estadística Comercial de la Republica de Chile correspondiente al Año de 1901 and Año de 1902*, Valparaiso.

† Consul-General St. John, "Trade of Peru for the year 1902." *Dipl. and Cons. Reports*. No. 3079, Ann. Ser., 1903 [Cd. 1766-13], p. 24.

‡ Acting Consul-General Rhind, "Trade of Rio de Janeiro for 1898." *Dipl. and Cons. Reports*, No. 2,284, Ann. Ser., 1899 [C. 9044-110], p. 27.

§ Consul-General Chapman, "Trade of Brazil for the year 1902." *Dipl. and Cons. Reports*, No. 3,050, Ann. Ser., 1903 [C. 1386-127], p. 14.

## BRAZIL—continued.

*ds.\**—Compared with the output of Kimberley, the total production of diamonds estimated at 40,000 carats, is at present insignificant. A powerful company erected machinery for washing the diamondiferous gravel on a large very great increase in the total output of the country is confidently the most important diamond districts in Brazil are Diamantina, Grao Mogul, Diamantina, Bagagem, Goyaz, and Matto Grosso.

*Gold.*—The State of Minas Geraes, which contains the famous mines of St. John del Rey and Ouro preto, is the principal gold producer. Dredging has been started in the Coxipó-de-ouro River.

Gold has also been found in Northern Brazil† on the borders of French and British Guiana, which are both auriferous.

*Iron.‡*—There are large deposits of excellent iron ore in the State of Minas Geraes, and it is considered by Mr. Scott that the ore could be exported to England and the United States with profit.

*Manganese§* mining is an industry of recent date in Brazil, as no ore was raised until 1894. The principal workings are at Miguel Burnier and Queluz in the province of Minas Geraes, respectively 287 miles (462 kil.) and 308 miles (496 kil.) from Rio. There are also mines near Nazareth, 50 miles to the west of Bahia. According to a consular report 143,320 tons were shipped in British vessels alone in 1902.

*Monazite Sand* is obtained near the town of Prado in the north of the State of Bahia, the trade is a monopoly in the hands of one firm.

*Phosphate of Lime.||*—It is proposed to work the phosphate of lime which exists on the Island of Rata, near the Island of Fernando da Noronha.

TABLE 417.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons. (a)	£ —	Metric Tons. —	£ —
Diamonds (exported) ...	...	...	...	...
Gold ...	Kilos. 4,012 (e)	535,000	—	—
Manganese ore ...	100,414 (b)	144,082	—	—
Monazite ...	1,643 (c) ¶	33,937	824 **	16,223
Salt ...	11,535 (d) ¶	6,474	—	—

\* Beaumont, "A Journey to the Diamond Fields of Minas Geraes." *Dipl. and Cons. Reports*, No. 2,058, Misc. Ser., 1899 [C. 9045-22], pp. 10 and 12, and United States Consular Report, No. 424, May, 1899.

† Consul Churchill, "Trade of Pará for the years 1898 and 1899." *Dipl. and Cons. Reports*, No. 2,389, Ann. Ser. 1900 [Cd. 1-26], p. 6.

‡ H. K. Scott, "The Iron Ores of Brazil." *Jour. Iron and Steel Institute*, Vol. LXI., 1902, p. 250.

§ H. K. Scott, "The Manganese Ores of Brazil." *Jour. Iron and Steel Institute*, Vol. LVII., 1900, p. 179, and Consul-General Chapman, "Trade of Brazil for the first half of the year 1902." *Dipl. and Cons. Reports*, No. 2,938, Ann. Ser. [CJ. 1386-15], 1903, p. 7.

¶ Consul Howard, "Trade of Pernambuco and District for the year 1898." *Dipl. and Cons. Reports*, No. 2,288, Ann. Ser., 1899 [C. 9044-113], pp. 9 and 10.

\*\* Consul Medhurst, "Trade of Bahia and Sergipe for the year 1901." *Dipl. and Cons. Reports*, No. 2,888, Ann. Ser. 1902 [Cd. 786-192], pp. 10 and 14.

¶ Consul Medhurst, "Trade of Bahia for the year 1902." *Dipl. and Cons. Reports*, No. 3,061, Ann. Ser., 1903 [Cd. 1,386-138], p. 13.

(a) Not stated.

(b) Exports of Rio de Janeiro and Bahia—value of exports of Bahia estimated.

(c) Exports of Bahia only.

(d) Exports from Sergipe only.

(e) Exports from the State of Minas Geraes only.

**Bulgaria.\***

Bulgaria possesses fairly rich deposits of coal and lignite ; the ores of copper, iron, lead, and manganese are known to exist, but are not yet worked. Gold is obtained in many places from the sand of rivers. Limestone and marble are quarried on a small scale.

*Lignite.*—The State works lignite mines at Pernik and Bobovdol. The Pernik colliery is about 19 miles from the capital, with which it is connected by a railway, and it can therefore be worked to advantage. The Bobovdol colliery is far from any railway, and is worked to supply local wants only, the total output being only 2,000 tons a year.

The Trévna coalfield, 38 miles from Tirnovo, likewise lacks a railway for getting rid of its produce, and is worked on a very limited scale indeed.

TABLE 418.

## PERSONS EMPLOYED at the PERNIK LIGNITE MINES.

	Year.				Number of Persons Employed.
	1901	...	...	...	1,505
	1902	...	...	...	1,372

TABLE 419.

## QUANTITY of MINERAL produced at the PERNIK MINES during the Years 1901 and 1902.

Year.				Mineral.	Quantity raised.	Value.
					Metric Tons.	
1901	...	...	...	Lignite	137,194	{ Francs ... 1,188,732 £ sterling ... 47,549
1902	...	...	...	Lignite	128,045	{ Francs ... 1,144,772 £ sterling ... 45,791

TABLE 420.

## DEATHS at the PERNIK LIGNITE MINES during the Years 1901 and 1902.

Year.				Number of Deaths.	Death-rate per 1,000 Persons Employed.
1901	...	...	...	—	—
1902	...	...	...	3	2·19

\* Official information furnished by the Chief of the Section of Mines of the Ministry of Commerce and Agriculture, Sofia.



## Cameroons.\*

*Salt*.—Important brine springs are known in the Keaka district and near the Cross River.

## Canary Islands.

Lava and consolidated volcanic ash are quarried in various places for supplying building stone and paving slabs.

Loose cinders, dug from the sides of volcanic cones, are utilised for the manufacture of big blocks of concrete.

Pumice stone is obtained from the flanks of the Peak of Teneriffe and exported into England.

Limestone for local use is quarried in Fuerteventura, and to a small extent in Grand Canary. This latter island has a set of pans in which salt is obtained from sea-water by solar evaporation.

Celebes (*See* DUTCH EAST INDIES).

## Chili.

The wealth of Chili is largely due to its mineral treasures, of which nitrate of soda is the most important.

Other important exports are: borate of lime, coal, copper, guano, gold and gold ore, iodine, manganese ore, salt, and silver.

*Borate of Lime*.†—The borate deposit of Ascotan in the interior of Antofagasta is at present the most productive in Chili; from it alone 10,920 tons were shipped in 1900. Valuable deposits, containing more than 600,000 tons of the mineral, are stated to exist within reach of the Port of Taltal.

*Coal*.‡—The principal coal-fields are South of Concepcion. The coal, which is of Eocene age, has been extensively worked for many years at Coronel and Lota. Still further South there is coal of Miocene age extending to the Straits of Magellan.

*Copper*.‡—Copper mining, once the chief mineral industry of the country, is still of considerable importance. The copper resources of the country are said to be great. The total quantity of fine copper contained in the copper produce of Bolivia and Chili exported in 1900 is stated to be 565,062 quintals (26,000 metric tons).§

\* Buchanan, "Report on the German Colonies for the year ending 30th June, 1901." *Dipl. and Cons. Reports*, Ann. Ser., No. 2,790 [Cd. 786-94]. London, 1902, p. 14.

† Vice-Consul Rowley, "Trade of Chili for the year 1900." *Dipl. and Cons. Reports*, No. 2,700, Ann. Ser., 1901, pp. 28 and 29.

‡ Consul-General Sir Barry Cusack-Smith, "Trade of Chili for the year 1899." *Dipl. and Cons. Reports*, No. 2,481, Ann. Ser., 1900 [Cd. 1-118].

§ Rowley *op. cit.*, p. 48.

## CHILI—continued.

*Guano.*—Some persons may object to recent deposits of bird dung being called minerals, but they are so treated in the official statistics. The guano beds of Guanillos, Punta de Lobos and Pabellan de Pica, lately worked by the Peruvian Corporation Ltd., have now been taken over by the Chilian Government.

*Nitrate of Soda.\**—This industry is flourishing. In the year 1902 there were 80 saltpetre works in operation, of which 68 were in Tarapacá; they produced 1,858,270 metric tons of nitrate of soda and 130 metric tons of iodine. Compared with the previous year there is an increase of 532,402 tons of nitrate and a decrease of 116 tons of iodine. The diggings and works afforded employment to 24,538 persons, of whom 17,461 were Chilians, 2,805 Peruvians, and 3,352 Bolivians; the remaining 920 persons belonged to various nationalities. The principal port at which the nitrate is shipped is Iquique; Caleta Buena comes next in importance, and then Pisagua.

*Salt.\**—A bed of salt of unknown thickness and extending over an area of more than 120 square miles is being worked near Punta de Lobos. The export was over 9,500 tons in 1902.

*Sulphur.*—Native sulphur mines near Arica are being actively worked.†

TABLE 421.

QUANTITY and VALUE of MINERALS exported during the Years 1901 and 1902.‡

Description of Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony ore ... ..	1	820	1	1,350
Borate of Calcium ... ..	11,455	1,302,401	14,327	1,355,511
Borax ... ..	97	9,685	—	35
Coal ... ..	226	3,106	—	—
Cobalt ore ... ..	76	11,519	464	72,791
Copper, ingots ... ..	24,480	19,627,114	21,197	13,857,823
„ matte ... ..	2,905	1,084,727	2,094	585,852
„ ore ... ..	15,929	1,614,178	22,622	2,406,241
„ precipitate ... ..	6	2,897	1	700
Copper and Gold, ingots ... ..	18	2,000	—	—
„ „ „ ore ... ..	—	—	22	6,561
„ „ „ matte ... ..	14	6,422	73	32,637
Copper and Silver ore ... ..	119	46,436	133	33,767
Copper, Gold, and Silver ore... ..	Kilos. 60	500	2	396

\* *Memoria del Delegado Fiscal de Salitreras presentada al Señor Ministro de Hacienda en 1903*, Santiago de Chile, 1903, p. 20, p. 84, and p. 106.

† Rowley, *Op. cit.*, p. 57.

‡ Official Return furnished by the "Sociedad de Fomento Fabril," Santiago, and published in the *Estadística Comercial de la Republica de Chile correspondiente al año de 1901*, Valparaiso, 1902, pp. 157-160, and corresponding publication for 1902, Valparaiso, 1903, pp. 161-164.

## CHILI—continued.

TABLE 421—continued.

QUANTITY and VALUE of MINERALS exported during the Years 1901 and 1902—cont.

Description of Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Copper, Gold, and Silver matte ...	208	124,729	220	131,745
„ „ „ „ precipitate...	Kilos. 151	3,732	—	—
Copper and Silver matte ...	1,779	1,340,420	94	49,078
Copper, Silver, and Lead ore...	—	—	75	15,872
Gold ... ..	Kilos. 637	1,038,577	Kilos. 762	1,337,020
Gold ore... ..	66	33,696	115	50,453
„ precipitate ... ..	Kilos. 269	435,179	Kilos. 4,909	236,019
Gold and Silver ores ... ..	196	42,710	610	244,245
„ „ „ precipitate ... ..	—	—	Kilos. 310	25,657
Guano ... ..	8,250	329,924	—	—
Iodine ... ..	285	3,559,075	244	3,055,087
Iron ore ... ..	—	—	22	1,000
Lead ... ..	14	5,840	—	—
Lead, silver ... ..	441	197,396	99	48,294
Lime ... ..	6	179	—	—
Manganese ore ... ..	18,480	554,409	12,990	389,700
Nitrate of Soda... ..	1,291,958	118,860,131	1,330,598	126,406,771
Salt ... ..	11	409	Kilos. 138	10
Silver, ingots ... ..	Kilos. 46,164	2,690,049	Kilos. 31,812	1,654,502
„ ore ... ..	6,166	4,929,315	114	69,367
„ precipitate ... ..	Kilos. 3,467	204,783	Kilos. 86	5,212
„ sulphide... ..	264	872,779	176	536,262
Silver and Lead ores ... ..	—	—	161	9,500
Sulphur... ..	9	854	32	3,200
Tin ... ..	4	2,604	—	—
Other Minerals... ..	—	5,612	—	29,945
Total Value in Dollars ...	—	158,944,207	—	152,652,603
„ „ „ £ sterling ...	—	£11,920,815	—	£11,448,945



## China.\*

China is rich in many minerals and more particularly in coal, which is widely distributed throughout the vast empire, and especially in the provinces of Pechili, Shan-si, Shan-tung, Ho-nan, and Hu-nan; indeed the richness in coal seems to be unparalleled. In many provinces iron ore is likewise abundant.

Among other minerals may be mentioned the ores of antimony, copper, gold, iron, lead, quicksilver, silver, tin, and zinc, besides petroleum, salt, and sulphur. A good general idea of the distribution of the mineral wealth of China is obtainable from a map accompanying some articles by Mr. Lynwood Garrison.†

The coal-fields of north-eastern China, and especially those of western Chili and eastern Shansi, have lately been described by Mr. Drake.‡

The export of antimony ore from Hunan§ rose from 3,254 tons in 1901 to 10,313 tons in 1902.

The province of Kuangsi has deposits of coal and the ores of antimony, gold, and tin,|| but this mineral wealth remains untouched, and the provincial regulations make mining by foreigners impossible.

The province of Sze-chuan,¶ in the extreme west, is remarkable for its salt and natural gas. The annual output of the brine wells of Tze-liu-ching in Sze-chuan is estimated to be about 178,000 tons of salt.

The province of Chi-li\*\* has yielded gold for many centuries. The metal occurs in quartz veins and in alluvial deposits; the output in 1898 was 50,000 ozs.

Coal and the ores of iron, lead and silver are said to abound in the province of Fohkien.††

The province of Kwei-chau‡‡ is rich in coal, ores of copper, iron, and quicksilver.

The province of Shan-si§§ is remarkable for its great wealth of coal. At the present time the workings are comparatively shallow, and all the winding is done by hand. The total annual output, reckoned at 50,000 tons, is therefore no index of the great resources of the coalfields.

The province of Shan-tung||| possesses deposits of coal, copper, diamonds, gold, iron, lead, and silver. The first-named mineral is the most important, and is already worked on a small scale and in a very primitive fashion in various parts of the province. No shaft is more than 30 yards (28 m.) deep, and the usual depth is only about 20 yards. It is expected that the harbour of Kiao-chou will shortly be connected by rail with the Wei-hsien coalfield, the first of importance.¶¶ An extensive bed of hæmatite in the neighbourhood of the I-chou-fu coalfield, which can be worked opencast, may be of importance to Kiao-chou in the future.

\* The "salt wells of China." *Jour. Soc. Arts*, Vol. XLVI., 1898, p. 385.

Fearon and Allen.—"The Chinese, and recent industrial progress in China." *Eng. Mag.*, Vol. XVI., 1898, p. 166.

M.R.D.—"Chinese Minerals." *The Investors' Review*, Oct. 1897, p. 216.

Jameson.—"Coal and Iron in Eastern China." *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 365.

Kurita.—"Coal and Iron Deposits of Eastern China." *Eng. Min. Jour.*, Vol. LXV., 1898, p. 491.

† "The Mining and Industrial Development of China." *Mining and Metallurgy*, Vol. XXI., 1901, p. 65.

‡ *Trans. Am. Inst. M.E.*, vol. xxxi., 1901.

§ Jamieson, "Foreign trade of China for the year 1902." *Dipl. and Cons. Reports*, No. 3,092, Ann. Ser., 1903 [Cd. 1766-26], p. 48.

|| Fox, "Trade of Wuchow for 1902." *Dipl. and Cons. Reports*, No. 3,006, Ann. Ser., 1903 [Cd. 1386-83], p. 5 and p. 13.

¶ Upcraft, "The Salt Wells of Sze-chuan, China." *Eng. Min. Jour.*, Vol. LXIX., 1900, p. 525; and Murdoch, "Notes on Brine and Oil Wells in Western China." *Trans. Inst. M. and M.*, Vol. IX., 1900-01, p. 362.

\*\* Hoover, "Metal Mining in the Provinces of Chi-li and Shantung, China." *Proc. Inst. Min. and Met.*, Vol. VIII., 1900, pp. 324-331.

†† Consul Mansfield, "Trade of Amoy for the year 1899." *Dipl. and Cons. Reports*, No. 2,502, Ann. Ser., 1900 [Cd. 1-139], p. 8.

‡‡ Prospectus of the Anglo-French Quicksilver and Mining Concession (Kwei-chau province) of China, Ltd., March, 1899.

§§ Drake, "The Coalfields around Tse Chou, Shan-si." *Trans. Amer. Inst. M. E.*, New York, 1900

||| Buchrucker, "Ueber eine bergmännische Forschungsreise in der Provinz Shantung." *Zeitschr. f. prakt. Geologie*, 1899, p. 206.

¶¶ Consul Hopkins, "Trade of Chefoo for the year 1898." *Dipl. and Cons. Reports*, No. 2,307, Ann. Ser., 1899 [C. 9044-133], p. 11.



## CHINA—continued.

Consul Jamieson,\* while admitting the great mineral wealth of the province of Yunnan, is of opinion that the difficulties in the way of working are so formidable that capital cannot be profitably employed in mining enterprises, at least in the southern and western sections of the province. Some of the important tin mines† of Yunnan are situated near Mengtse, not far from the boundary of French Tonquin. Salt is produced from mines and brine wells near Pu Erh, and some of it is exported into the British Shan States and French Laos.‡

No mineral statistics are published by the Chinese Government.

The Director of the United States Mint states that 13,680 kilos. of fine gold of the estimated value of £1,866,838 were produced in 1901.§

## Cochin China. (See INDO-CHINA.)

## Colombia.||

*Coal.*—Coal is mined on a small scale only, though extensive beds of bituminous coal occur in various parts of the country.

*Copper.*—Deposits of copper ore are known to exist, but they are unworked.

*Emeralds.*—The famous mines of Muzo have been worked continuously to obtain this gem for more than three centuries.

*Gold.*—This is the most important mineral of the country. The precious metal is obtained by hydraulic mining, by dredging the beds of existing rivers, and by working auriferous veins. Antioquia, Cauca, and Choco are the principal mining districts.

*Manganese ore.*¶—This ore is worked about 40 miles east of Colon.

*Salt.*—Rock salt is mined near Bogota.

TABLE 422.

QUANTITY and VALUE of GOLD and SILVER produced during the Years 1900 and 1901.

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
Gold (Fine)** ... .. Kilos.	1,798	£ 245,359	4,215	£ 575,216
Silver (Fine)**... .. Kilos.	57,994	237,331††	58,537	231,828††

\* China, No. 3 (1898). *Consular Reports on the trade of Yunnan*. [C. 9083], 1898.

† Litton.—"Trade of Ssumao and Mengtse." *Dipl. and Cons. Reports*, No. 2,542, Ann. Series, 1900 [Cd. 429], p. 7.

‡ Acting-Consul Carey.—"Trade of Ssumao and Mengtse for the year 1900." *Dipl. and Cons. Reports*, No. 2741. Ann. Ser. 1902 [Cd. 786-45], p. 5.

§ *Report of the Director of the United States Mint for 1902*, Washington, 1903.

¶ Granger and Treville, "Mining Districts of Colombia." *Trans. Am. Inst. Min. Eng.*, Vol. XXVIII., 1898.

\*\* *Trans. Am. Inst. Min. Eng.*, Vol. XXVII., 1897, p. 63.

†† *Report of the Director of the United States Mint for 1902*, Washington, 1903.

†† Commercial value of fine silver.

### Congo Free State.\*

No mines have as yet been worked by Europeans ; but the natives of the Upper Congo dig a little iron ore and copper ore, and extract the metals for the purpose of making weapons, tools and utensils.

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### Corea.

Corea appears to be rich in minerals, especially in the province of Ping-Yang, where coal and gold are being worked. Large deposits of smokeless coal exist in the country.†

According to the consular report,‡ the value of the gold exported annually from Corea exceeds £500,000, but this sum does not include the value of the gold carried away by persons in their luggage. The gold is mainly obtained from quartz mines worked by American and European companies. The Gwendoline mine in the Unsan district employs 736 persons, and another gold mine at Tangokae, or Kimo Song, employs more than 500.

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### Costa Rica.§

There are two groups of gold mines near the Pacific Coast which are being worked regularly, viz., the Bella Vista Group near Miramar, 15 miles from Puntarenas, and the Abangares group, 18 miles from Puerto Yglesias on the Gulf of Nicoya. The value of the gold from the mines exported during the year 1902 amounted to £29,482, according to the official return.

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### Cuba.||

The following minerals have been more or less constantly mined in Cuba :—

*Asphalt and Petroleum.*—There are large deposits in several places.

*Clay.*—Clay fit for making bricks and tiles is abundant.

*Copper ore.*—Copper ore has been mined on an extensive scale, particularly at Cobre, in the province of Santiago de Cuba. It occurs in many places in the eastern part of the island.

*Gold.*—This metal is said to abound in the provinces of Santa Clara and Santiago.

*Iron ore.*—The latter province possesses extensive deposits of iron ore. The Spanish-American Iron Co. and the Juragua Iron Co. are the principal producers ; their combined exports in 1902 amounted to 676,144 tons. The total quantity exported from the island during the year was 699,734 tons.

*Limestone.*—This rock abounds everywhere.

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\* Information furnished by the Département des Finances, Brussels.

† *Eng. Min. Jour.*, Vol. LXVII., 1899, p. 676.

‡ Consul Lay, "Trade of Corea for the year 1902." *Dipl. and Cons. Reports.* No. 2,995. Ann. Series, 1903 [Cd. 1386-72], p. 4.

§ Consul Cox, "Report on the Trade of Costa Rica for the year 1902." *Dipl. and Cons. Reports.* No. 3,077, Ann. Series, 1903 [Cd. 1766-11].

|| Day, "Mineral Resources of the Antilles, Hawaii, and the Philippines." *Eng. Mag.*, Vol. XVII., 1899, page 242. Swank, "The American and Foreign Iron Trades in 1899." *U.S. Geol. Survey*, Washington, 1900. Day, "Mineral Resources of the United States." *U.S. Geol. Survey*, Washington, 1902.



## CUBA—continued.

*Manganese ore.*—The deposits of manganese ore hitherto worked are situated in the vicinity of the city of Santiago.\* The output for 1902 was 39,628 tons, and most of it was exported to the United States.

## Curaçao. (See DUTCH WEST INDIES.)

## Denmark.†

Chalk and calcareous marl are quarried near Aalborg. The annual output is from 12,000 to 15,000 tons.

Bog iron ore exists in Jutland,‡ and in years gone by it was occasionally worked and smelted on a small scale.

## FAROE ISLANDS.§

For at least two centuries it has been known that the island of Suderö possesses deposits of coal, and it is now rumoured that they will be worked.

## GREENLAND.||

The quantity of cryolite obtained from Ivigtut during the year 1901 was 7,997 tons, and in 1902 was 10,085 tons.

During the summer months 113 persons were employed in 1901, and 76 in 1902. These numbers were reduced during each winter by about 65 and 35 men respectively.

Two fatal accidents, resulting in 2 deaths, occurred during the year 1902.

## ICELAND.

*Coal.*—A bed of coal is said to have been discovered at Nordfjord, in Iceland.

*Iceland Spar.*¶—About ten men are employed in the summer at a quarry on the east coast of the island for the purpose of getting transparent calcite for optical instruments. The best quality is worth £12 per kilogramme. The total value of the yield is about £280 yearly.

## Dutch East Indies.\*\*

Many of the Dutch Colonies in the East Indies contain valuable mineral deposits, which are being worked on a large scale.

\* Spencer, "Manganese deposits of Santiago, Cuba." *U.S. Geol. Survey. Contributions to Economic Geology*, 1902. Washington, 1903.

† Consul Boyle, "Trade and Agriculture of Denmark for the year 1898." *Dipl. and Cons. Reports*, No. 2,141, Ann. Series, 1898 [C. 9044-127].

‡ *Glückauf*, Vol. XXXIV., 1898, p. 872.

§ "Die Kohlen auf den Faröer." *B.n.h. Zeitung*, Vol. LX., 1901, p. 162.

|| Official Report furnished by the Danish Government.

¶ *Mineral Mag.*, Vol. XIII. 1903, p. 396.

\*\* Official Return furnished by the Colonial Department of the Dutch Government.

DUTCH EAST INDIES—continued.

BANCA.

The alluvial diggings of the Island of Banca still yield large quantities of tin ore, and the output is increasing.

TABLE 423.

	Year.			Persons Employed.	Quantity of Metallic Tin produced.	
					Pikols.	Metric Tons.
	1900-1901	...	...	14,447	202,728	12,511
	1901-1902	...	...	13,257	171,133	10,561

The number of persons in the table includes not only the actual diggers of the ore, but also the charcoal burners and the smelters.

BILLITON.

Like Banca, its neighbour Billiton is a large producer of tin ore.

TABLE 424.

	Year.			Average Number of Persons Employed.	Quantity of Metallic Tin produced.	
					Pikols.	Metric Tons.
	1900-1901	...	...	6,409	80,203	4,897
	1901-1902	...	...	7,207	70,768	4,321

BORNEO.\*

*Coal.*—The mines of Mahakkam River at Kutei in South-Eastern Borneo produced 5,531 metric tons of coal in 1901, and 10,579 tons in 1902. Small quantities of coal are raised at Salimbau in Western Borneo; the output was 185 tons in 1900, and 6 tons in 1901.

*Diamonds.*—The estimated output of diamonds from Western Borneo was 610 carats in 1900, 810 carats in 1901, and 855 carats in 1902. Profitable diamond diggings were discovered by chance in the Martapura district of Southern and Eastern Borneo.

*Gold.*—There are three well marked auriferous districts in the island, viz., Sambas in Western Borneo, a second at the sources of the Kehajang and Kapuas rivers in Central Borneo, and a third in the south-eastern corner of the island.†

\* See also British North Borneo, p. 322.  
† Truscott, "The Mining and Occurrence of Gold in the Dutch East Indies." *Trans. Inst. M. and M.*, Vol. X., 1901, with map.

DUTCH EAST INDIES—*continued.*

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† Truscott, "The Mining and Occurrence of Gold in the Dutch East Indies." *Trans. Inst. M. and M.*, Vol. X., 1901, with map.



DUTCH EAST INDIES—BORNEO—*continued.*

The output of gold from the Western Division of Borneo was 1,136 thail, or 61 kilograms valued at fl. 78,760 in 1900, 984½ thail, or 53 kilograms, valued at fl. 60,240 or £5,020 in 1901, and about 417 kilograms in 1902. The gold diggers are mostly Chinamen. 962 thail, 52 kilograms, were produced in other localities.

*Petroleum.\**—Borneo has lately become a producer of mineral oil. The oil-field is situated in the Sultanate of Kutei, a Dutch protectorate on the East Coast of Borneo. The crude oil is either refined on the spot or shipped direct from Balek Pappan. Steamers are using the crude oil as fuel, and also the liquid residue from the petroleum refineries. In 1902 the following quantities were produced: liquid fuel, 82,832 tons; kerosene, 14,207 tons; and solar distillate, 8 tons. The Poeloe Miang (Kutei) Concession produced 1,400 tons of crude oil.

## CELEBES.†

*Gold.*—The precious metal has long been worked by the natives in the northern arm of the island, and within the last decade several European companies have been formed for the purpose of conducting operations on a larger scale.

## JAVA.‡

Among the mineral productions of Java may be named coal, gold, iodine, manganese ore, and petroleum.

*Coal.*—A little coal has been worked in the Sedan district.

*Gold.*—The natives, especially the women, obtain some gold by washing river sand in wooden bowls. Several gold mining companies have been started with European capital, and rich gold ore is being exported to Liverpool.

*Iodine.*—The Gunong Watoe Concession has springs containing iodides in solution, from which 1,054 kil. of crude iodide of copper were manufactured in 1901, and 1,329 kil. in 1902.

*Manganese.*—Manganese ore is produced in the regencies of Pengasih and Nanggoelan. The output was 4,800 tons in 1898 and 1,388 tons in 1899.

*Petroleum.*—Petroleum occurs in various parts of the island, and is obtained on a large scale by borings. The combined output of the wells was 63,182,955 litres of crude oil, and 20,290,000 litres refined oil in 1902.

## SINGKEP.§

The small tin-producing island of Singkep forms a sort of connecting link between Banca and the Malay Peninsula.

\* *Petroleum*, Vol. I., London, 1900, p. 179.—*Shipping and Mercantile Gazette and Lloyd's List*. London, 22nd June, 1900, and Official Return furnished by the Colonial Department of the Dutch Government.

† Truscott, "The Mining and Occurrence of Gold in the Dutch East Indies." *Trans. Inst. M. and M.*, Vol. X., 1901, with map.

‡ Consul Davids, "Trade of Java for the Year 1901." *Dipl. and Cons. Reports*, No. 2863, Ann. Series, 1902 [Cd. 786-167], p. 9; and Official Return furnished by the Colonial Department of the Dutch Government.

§ Official Return furnished by the Colonial Department of the Dutch Government and *Jaarboek van het Mijnuwezen in Nederlandsch Oost-Indië Dertigste Jaargang* 1901. Batavia, 1901.



## DUTCH EAST INDIES—continued.

TABLE 425.

Year.	Number of Mines at Work.	Number of Persons Employed.	Quantity of Metallic Tin produced.	
			Pikols.	Metric Tons.
1900-1901 ... ..	16	1,679	12,989	783
1901-1902 ... ..	16	1,734	9,978	602

About two-thirds of the persons were engaged at the tin diggings proper, and one-third in getting charcoal and smelting the ore.

## SUMATRA.\*

*Coal.*—The Dutch Government is working collieries in the Ombilien coalfield, which is now connected by rail with the port of Padang. One of the principal seams is 10 feet thick, and the other from 26 feet to 39 feet. The coal is said to be very free from ash. The output in 1901 was 195,000 tons, and that of 1902 was 180,000 tons.

*Gold.*—The principal gold workings are at Redjang Lebong in the south-west part of the island, and they yielded 18,712 ozs. (582 kil.) of fine gold and 119,826 ozs. (3,727 kil.) of fine silver during the year 1901, and 22,698 ozs. (706 kil.) of fine gold and 122,205 ozs. (3,801 kil.) of fine silver in 1902. Two other undertakings Soemalata I. and Palaleh also yielded some gold and silver.

*Petroleum.*—Sumatra's principal petroleum wells are on the east coast at Langkat; they yielded 277,595,640 litres or 7,343,800 cases (1 case = 37·8 litres) of refined petroleum in 1901 and 143,042,630 litres in 1902. The oil is exported to the Straits Settlements, Burmah, Siam, Cochin China, and elsewhere.

TABLE 426.

NUMBER OF PERSONS EMPLOYED AND QUANTITY OF COAL PRODUCED AT COAL MINES in 1901 and 1902.

Year.	Number of Persons Employed.	Quantity of Coal produced.	
		Metric Tons.	
1901 ... ..	2,402	198,073	
1902 ... ..	2,902	180,702	

## Dutch Guiana or Surinam.†

At the present time mining in Dutch Guiana is confined almost entirely to the working of alluvial gold deposits, and the gold industry is in an unsatisfactory condition, owing principally to difficulties of transport. A railway has, however, now (1904) been commenced, which will, when finished, give a considerable impetus to the industry.‡

The estimated quantity of gold produced in 1901 was 753 kilograms, valued at fl. 1,031,394 or £85,949, and in 1902, 587 kilograms valued at fl. 805,017 or £67,085.

\* Official Return furnished by the Colonial Department of the Dutch Government and *Jaarboek van het Mijnwezen in Nederlandsch Oost-Indië* Dertigste Jaargang, 1901. Batavia, 1901.

† Official Return furnished by the Colonial Department of the Dutch Government and Consul Piggott, "Trade of Dutch Guiana for the year 1902." *Dipl. and Cons. Reports*, No. 3078, Ann. Ser. 1903 [Cd. 1766-12], 1903.

‡ Report received by Foreign Office from Consul Piggott, Paramaribo, February, 1904.



## Dutch West Indies.\*

## ARUBA.

Gold mining is carried on by an English company. In 1901, 16 kilograms, valued at fl. 25,550, or £2,129, and in 1902, 20 kilograms, valued at fl. 32,811, or £2,734 were shipped.

Phosphate of lime was quarried with great profit between the years 1884 and 1892; in spite of lower prices the deposits are still being worked, and the quantity exported in 1901 was 10,413 tons (16,838 cubic metres), and in 1902, 10,530 tons (17,027 cubic metres); about one half of the quantity shipped comes to Great Britain.

## BONAIRE, AND ST. MARTIN.

Salt is obtained by the natural evaporation of sea water at both these islands. In 1901 the export of salt from Bonaire was 84,694 hectolitres, valued at fl. 42,347, or £3,529, and in 1902, 82,883 hectolitres, valued at fl. 39,783 or £3,315. From St. Martin in 1901 the export was 49,961 hectolitres, valued at fl. 23,981 or £1,998, and in 1902, 48,595 hectolitres, valued at fl. 23,326, or £1,944. A trial cargo of manganese ore was shipped to the United States in 1900; but the result appears to have been unfavourable.

## CURAÇOA.

The phosphate of lime mines in this island have been at a standstill since 1895. In 1901, 83,602 barrels of salt, valued at £8,642, were exported from Curaçoa.

## SABA.

The sulphur deposits are no longer worked.

## Ecuador.†

It is said that gold abounds, though the yearly output is small. It is obtained mainly from alluvial deposits, but the auriferous veins are being tested on a commercial scale.

There are also deposits of anthracite, copper ore, petroleum, salt, and silver ore.‡

It is not surprising that one article of commerce of a country possessing active volcanoes should be pumice stone. It is cut up for sale into lumps like bricks.

TABLE 427.

ESTIMATED QUANTITY and VALUE of GOLD produced in 1901 and of SILVER for 1900\$.

1900.		1901.	
Fine Silver.		Fine Gold.	
Quantity.	Commercial Value.	Quantity.	Value.
Kilos. 240	£ 986	Kilos. 165	£ 22,587

\* Official Return furnished by the Colonial Department of the Dutch Government and Consul Jesurun, "Trade of Curaçoa and its Dependencies for the year 1901." *Dipl. and Cons. Reports*, No. 2,902, Ann. Ser., 1901 [Cd. 786-206], 1902, p. 19 and p. 24.

† Consul Söderström, "Trade of Quito for the year 1897." *Dipl. and Cons. Reports*, No. 2,101, Ann. Ser. 1898 [C. 8648-123].

‡ Consul Chambers "Trade of Guayaquil for the year 1898." *Dipl. and Cons. Reports*, No. 2,246, Ann. Ser. 1899 [C. 9044-72].

§ *Mining Journal*, Vol. LXX., 1900, p. 620.

¶ *Report of the Director of the United States Mint for 1902*, Washington, 1903.



### Egypt.\*

*Coal.*—Boring operations are likely to be commenced in the coal-prospecting area of the Nile valley.

*Copper.*—Prospecting for copper is being undertaken in Sinai.

*Gems.*—The turquoise mines at Wady Maghara in the peninsula of Sinai are no longer being worked by the English Company.

*Gold.*†—Prospecting is being carried on actively over a large tract of country between the Nile and the Red Sea. It is evident from the remains of old workings that very considerable quantities of gold were extracted from quartz reefs in ancient days. The Um Rus Mine is being actively developed.

*Petroleum.*‡—The mineral oil at Jebel Zeit on the west shore of the Gulf of Suez has again been examined with a view to ascertaining whether it is worth working.

*Phosphate of Lime.*§—Large deposits of phosphate of lime have been discovered in several parts of the country in rocks of Cretaceous age. Those near Kosseir have been traced for a distance of 40 miles.

*Salt.*||—The natural evaporation of the waters of Lake Mareotis leaves a considerable quantity of salt, and this source of supply is still largely utilized as it has been for many years past. Some large salt pans have been constructed near Port Said for the purpose of making salt from sea water; they are stated to be capable of producing 150,000 tons yearly.

*Soda.*—According to the Third Annual Report of the Egyptian Salt and Soda Company, Ltd., 1903, it has not been found possible with profit at the present time to produce soda on a commercial scale from the natural alkali deposits of Wady Natron. Small quantities of the crude natron are sold to the natives.

*Stone.*—Sandstone, and limestone are quarried.

### SOUDAN¶ (see also FRENCH SOUDAN).

The possible mineral wealth of the Soudan is practically unknown. Gold mines were once worked in the mountains south of Fazogl. Iron ore is found in Bahr-el-Ghazal Province and also in Darfur.

### Faroe Islands (see DENMARK).

### Eritrea.

Gold mines are being worked in this Colony by an Anglo-Italian Company.

### Formosa.\*\*

The Island of Formosa contains deposits of coal, gold, sulphur, and petroleum.

*Coal.*—In 1901 there were 73 collieries in the Kelung district, with a total output of 65,689 tons, valued at £25,332, and for the first half year of 1902 the output was 51,163 tons, valued at £17,198.

*Gold.*—Three gold mines worked in the Kelung district yielded 1,632 ozs. in 1901. Gold in fair quantity is likewise obtained by washing the banks and bed of the Kelung river. The total output from all the gold mines and from gold washing was 34,202 ozs., valued at £116,770 in 1901, and 48,400 ozs., valued at £168,226 in 1902.

*Salt.*—The export is a Government monopoly. The quantity exported in 1901 was 14,404 tons valued at £6,180, and in 1902, 37,433 tons valued at £12,568; the whole of this quantity was sent to Japan. The output for the year 1901 was 48,560 tons.

*Sulphur.*—The quantity obtained in 1901 was 1,610 tons valued at £4,559, and for the half year ended June, 1902, 796 tons valued at £1,954.

\* Information furnished by the Director-General of the Survey Department, Cairo.

† Alford, *Third Annual Report of the Egyptian Mines Exploration Co., Ltd.*, London, 1904.

‡ U.S. Consul-General Long. *Consular Reports*, No. 237, Vol. LXIII., June, 1890.

§ "A Report on the Phosphate deposits of Egypt." *Geological Survey. Public Works Ministry*, Cairo, 1900.

|| *Prospectus of the Egyptian Salt and Soda Company, Ltd.*, 6th November, 1899, and First Annual Report of the Company for 1900, also Consul Cameron "Trade of Port Said and Suez for the Year 1901." *Dipl. and Cons. Reports*, No. 2867, Ann. Ser. [Cd. 786-171], 1902, p. 4.

¶ Despatch from H.M. Agent and Consul-General at Cairo, enclosing a Report on the Soudan by Sir W. Garstin, K.C.M.G.—Egypt, No. 5 (1899) [C. 9332].

\*\* Consul Layard, "Trade of North Formosa for the Year 1902." *Dipl. and Cons. Reports*, No. 3054, Ann. Ser. [Cd. 1386-131], 1903, pp. 14 and 15, and Acting-Consul Griffiths, "Trade of South Formosa for the Year 1902." *Dipl. and Cons. Reports*, No. 3000, Ann. Ser. [Cd. 1386-77], 1903, pp. 13 and 18.



## France.\*

*Antimony.*—Sulphide of antimony is worked in seven departments on the mainland and also in Corsica.

*Bauxite.*†—Southern France possesses rich mines of bauxite; in the Department of the Var alone there are 31 quarries of this mineral.

*Coal.*—The extraction of fossil fuel is the most important mining industry in France, for 91 per cent. of the persons employed in and about mines in 1902 were workers at collieries. Another index of its importance is the value of the products. The value of the fossil fuel produced in 1902 was more than 90 per cent. of the value of the total output of all the mines.

The two great coal producing departments are the Pas-de-Calais and the Nord. The former yielded over 13 million tons, and the latter over 5 million; the two departments together produced more than 18 million tons, or 80·9 per cent. of the total output of the country. Next in importance is the Loire Basin with over 3 million. The two former Departments however have an advantage over the latter owing principally to cheaper railway transport.‡

The total quantity of brown coal produced during the year 1902 amounted to 632,000 tons, or a decrease of 60,000 tons compared with the previous year. The department of the Somme is the principal seat of the peat industry, and it produced 44,000 tons, or 42 per cent. of the total output in 1902.

The Central Committee of French Coal Mines, in its year book for 1903,§ publishes much valuable information concerning the mines, together with a reprint of the laws affecting mines and mining.

*Iron ore.*—There are three main iron ore districts (1) the North-east, or Meurthe-et-Moselle, which yields over 4 million tons out of a total of 5 million; (2) the Pyrenees, which give nearly  $\frac{1}{4}$  million tons; and (3) Normandy, with an output of 157,539 metric tons. Iron mining in Normandy is an industry of comparatively recent date. Its geographical position enables it to supply ore for export, whilst the other iron districts furnish ore for home consumption.

*Iron pyrites.*—Nearly all the iron pyrites is the produce of the Sain-Bel mines (Rhône).

*Lead ore.*—The principal lead mine is at Pontpéan in Brittany.

*Manganese ore.*—Las Cabesses mine (Ariège), which produced carbonate of manganese, was not worked in 1902. Pyrolusite is obtained at the Romanèche and Grand-Filon mines (Saône-et-Loire). The output at these latter mines was 8,300 tons.

*Phosphate of Lime.*—This mineral is worked in 23 departments, the Somme heads the list with an output of 256,000 tons in 1902.

*Salt.*—Much of the salt comes from a thick bed of rock salt in the Upper Trias in the department of Meurthe-et-Moselle. The bay-salt is the result of the evaporation of sea-water in marshes on the shores of the Atlantic and the Mediterranean.

*Stone, &c.*—France produces very large quantities of useful stones, &c., employed for building purposes, in various manufactures, in agriculture, for paving and road making, and for ornamental purposes. Details concerning them are contained in the French Statistical Volume.

*Zinc ore.*—The two largest workings for zinc are those of Malines (Gard) and Bormettes (Var).

\* *Statistique de l'Industrie Minière et des Appareils à Vapeur en France et en Algérie pour l'année 1902*, Paris, 1903, and information furnished by the French Government.

† Consul-General Gurney, "Trade of Consular District of Marseilles for the year 1901." *Dipl. and Cons. Reports*, No. 2855, Ann. Ser. [Cd. 786-159], 1902.

‡ Report by Consul Liddell to Foreign Office, 25 Nov. 1903.

§ *Comité Central des Houillères de France. Annuaire*, 1902. Paris, 1902.

FRANCE—continued.

TABLE 428.

PERSONS EMPLOYED at MINES, classified according to Ages, during the Years 1901 and 1902.\*

1901.

Kind of Mines.	Under-ground.				Above-ground.					Total Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	6,251	7,208	103,876	117,335	4,291	2,787	5,781	33,602	46,461	163,796
Other mines ... ..	67	192	11,119	11,378	235	289	433	3,961	4,918	16,296
Total ... ..	6,318	7,400	114,995	128,713	4,526	3,076	6,214	37,563	51,379	180,092

1902.

Kind of Mines.	Under-ground.				Above-ground.					Total. Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	6,126	7,015	105,602	118,743	4,603	2,680	4,686	34,098	46,067	164,810
Other mines ... ..	40	161	10,722	10,923	201	333	372	4,019	4,925	15,848
Total ... ..	6,166	7,176	116,324	129,666	4,804	3,013	5,058	38,117	50,992	180,658

TABLE 429.

PERSONS EMPLOYED at QUARRIES during the Years 1901 and 1902.\*

Kind of Quarries.	1901.			1902.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Underground ... ..	13,228	8,783	22,011	13,621	9,336	22,957
Open ... ..	—	110,418	110,418	—	111,666	111,666
Total ... ..	13,228	119,201	132,429	13,621	121,002	134,623

\* Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1901 and pour l'année 1902.



## FRANCE—continued.

TABLE 430.

QUANTITY and VALUE of the MINERALS raised from MINES and WORKINGS other than QUARRIES during the Years 1901 and 1902.\*

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Anthracite ... ..	1,577,000	—†	1,437,000	—†
Antimony ore ... ..	9,867	784,168	9,715	745,822
Arsenic ... ..	7,491	189,862	5,372	116,276
Bituminous shale, limestone, &c. ...	249,655	1,864,944	258,295	2,022,043
Brown coal ... ..	691,714	7,821,485	632,423	6,320,356
Coal ... ..	30,056,588	499,340,519‡	27,928,047	430,173,794‡
Copper ore ... ..	3,413	563,918	828	136,268
Gold quartz ... ..	170	2,970	—	—
Graphite ... ..	—	—	150	5,700
Iron ore ... ..	4,790,732	17,659,661	5,003,782	18,345,690
Iron pyrites ... ..	307,447	3,965,290	318,235	4,724,159
Lead ore, argentiferous ... ..	20,644	2,814,814	22,634	2,503,997
Manganese ore ... ..	22,304	475,125	12,536	327,674
Peat ... ..	118,433	1,745,656	109,941	1,674,233
Rock salt and salt from brine	295,392	6,368,379	292,523	6,610,917
Salt { Salt contained in brine used }	269,630	1,617,780	296,461	1,852,881
for making soda ... ..	345,328	4,145,552	274,943	4,001,256
Salt from sea water ... ..	6,836	81,536	8,021	98,192
Sulphur-bearing limestone ... ..	—	—	33	53,850
Tin ore ... ..	61,539	3,292,981	57,982	4,042,210
Zinc ore ... ..	—	—	—	—
Total value in Francs ... ..	—	552,734,640	—	483,755,318
£ sterling ... ..	—	£22,109,386	—	£19,350,213

TABLE 431.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1901 and 1902.\*

Mineral.					1901.		1902.	
					Quantity.	Value.	Quantity.	Value.
					Metric Tons.	Francs.	Metric Tons.	Francs.
Aluminous earth ... ..					505	10,450	1,275	20,375
Amethyst ... ..					45	31,500	45	31,500
Barytes ... ..					4,145	47,650	4,323	59,839
Bauxite ... ..					76,620	620,840	96,900	873,425
Cement ... ..					1,127,206	28,048,869	962,930	27,224,318
Chalk ... ..					41,040	583,375	38,765	581,102
Clay	China clay ... ..				73,625	1,622,987	70,851	1,741,022
	Fireclay ... ..				293,208	1,725,783	295,341	1,757,454
	Potter's clay ... ..				5,360,489	7,089,392	4,541,350	6,083,495
	White clay for Stucco ... ..				320	16,960	352	18,656
Flagstone ... ..					56,633	1,301,600	56,719	1,313,596
Fluor spar ... ..					3,970	57,770	2,650	39,420
Fuller's earth ... ..					3,400	17,000	3,400	15,300

\* Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1901, and pour l'année 1902.

† Value included with coal.

‡ Including value of anthracite.

FRANCE—continued.

TABLE 431—continued.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1901 and 1902.\*—continued.

Mineral.					1901.		1902.	
					Quantity.	Value.	Quantity.	Value.
					Metric Tons.	Francs.	Metric Tons.	Francs.
Gypsum	Plaster	...	...	...	1,635,210	15,728,556	1,572,687	16,005,625
	Manure	...	...	...	355,955	1,692,688	219,487	1,186,446
Lignite (Pyritiferous)...					17,260	77,670	6,200	27,900
Lime ...					4,747,583	42,976,387	4,796,807	43,439,725
Lithographic stone ...					1,030	35,500	441	20,810
Magnesium silicate ...					95	3,800	70	2,800
Marble ...					123,506	4,962,043	118,894	4,829,068
Marl ...					1,083,372	1,335,234	1,119,362	1,572,887
Millstones ...					33,286	1,454,565	34,504	1,507,781
Ochre ...					35,704	1,379,851	34,770	1,908,435
Onyx ...					2,250	151,293	2,283	153,288
Paving stone ...					547,831	9,437,652	554,854	9,336,791
Phosphate of lime ...					535,676	13,072,714	543,900	12,402,269
Sand, gravel, and flint ...					5,491,916	9,570,225	6,136,900	10,740,504
Slate	Roofing	...	...	...	288,508	17,197,175	320,098	19,813,870
	Slabs	...	...	...	1,304	192,800	1,410	204,500
Steatite, talc, and asbestos ...					11,395	395,400	10,365	343,100
Stone for building ...					10,277,098	48,639,061	10,725,607	48,215,450
,, (broken for ballast) ...					12,497,727	25,446,088	13,171,423	27,798,147
,, for mosaic work ...					2,554	64,000	2,100	53,000
Whetstones ...					486	39,136	641	51,766
Total value in Francs ...					—	235,026,014	—	239,373,664
,, £ sterling ...					—	£9,401,041	—	£9,574,947

TABLE 432.

DEATHS from ACCIDENTS at MINES during the Years 1901 and 1902.\*

Kind of Mines.	1901.						1902.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Anthracite, brown coal, and coal.	164	34	198	1'40	73	1'21	151	29	180	1'27	63	1'09
Other mines ..	24	5	29	2'11	1'02	1'78	16	1	17	1'46	20	1'07
Totals .. ..	188	39	227	1'46	76	1'26	167	30	197	1'36	69	1'09

\* Statistique de l'Industrie Minière en France et en Algérie pour l'année, 1901, and pour l'année 1902.

FRANCE—continued.

TABLE 433.

DEATHS from ACCIDENTS at QUARRIES during the Years 1901 and 1902.\*

Kind of Quarries.	1901.						1902.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Underground ..	36	3	39	272	34	177	47	3	50	345	32	218
Open .. ..	—	95	95	—	86	85	—	106	106	—	95	95
Total .. ..	36	98	134	272	82	101	47	109	156	345	90	116

The death-rates from accidents at coal mines per 1,000 persons employed below ground, are comparatively low, viz. :—

1896	...	...	...	...	1.62 per 1,000
1897	...	...	...	...	1.34 „
1898	...	...	...	...	1.26 „
1899	...	...	...	...	1.62 „
1900	...	...	...	...	1.62 „
1901	...	...	...	...	1.40 „
1902	...	...	...	...	1.27 „

In the years 1899 to 1902 there were five bad accidents, which luckily were not comparable in their effects to the big fire-damp explosions ; since 1891 there has been no really great disaster from this cause.

The five accidents referred to were as follows :—

TABLE 434.

Date.	Name of Mine.	Number of Persons Killed.	Cause of the Explosion.
1899 ...	Plat-de-Gier ... ..	16	Breaking of rope.
1900 ...	Tréllys ... ..	16	Issue of carbonic acid gas
" ...	Aniche ... ..	21	Explosion of underground dynamite store
1901 ...	Bessèges ... ..	9	Explosion of fire-damp.
1902 ...	Champagnac ... ..	8	Explosion of fire-damp.

\* Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1901, and pour l'année 1902.



French Guiana.\*

Gold mining is the only mineral industry of any importance in the French Colony. The districts where alluvial mining is principally carried on are Maroni and Mana. There is only one quartz mine successfully working at the present time, viz., that belonging to the Société Anonyme of St. Elie, situated in the Sinnamary district.

An attempt has been made at gold dredging, but the results so far have not been very satisfactory.

Prospecting for diamonds is being undertaken by a local syndicate.

The output of gold in 1902 was 4,645 kilos.

TABLE 435.

QUANTITY of GOLD produced in 1901 and 1902.

1901.		1902.	
Gold.		Gold.	
Quantity.	Value.	Quantity.	Value.
Kilos. 4,021	{ Francs 10,858,000 £ sterling 434,320	Kilos. 4,645	{ Francs 12,544,000 £ sterling 501,760

French Possessions (See ALGERIA, FRENCH GUIANA, FRENCH SOUDAN, INDO-CHINA, IVORY COAST, MADAGASCAR, NEW CALEDONIA, SENEGAL, and TUNIS).

French Soudan.

Eighty-four kilograms of fine gold, valued at 289,000 francs, were exported in 1898.†

German East Africa.‡

*Coal.*—There is a large coal bed in Songwe at the north end of Lake Nyassa ; it is not worked, as wood is at present a cheaper fuel for the steamers.

*Gems.*—Garnets are plentiful and £2,750 worth were exported in 1900–01.

*Gold.*—Prospecting is going on in the Irambi district, but the existence of new gold fields has not yet been definitely confirmed.

*Salt.*—Brine springs at Mlagarassi, Lake Nyassa, produce good salt.

\* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année, 1901, and pour l'année, 1902, and Acting Vice-Consul Fourrage.*—"Trade of French Guiana for 1902." *Dipl. and Cons. Reports*, No. 3,106, Ann. Ser. [Cd. 1766-40], London, 1903, pp. 4-6.

† *Statistique de l'Industrie Minérale en France et en Algérie pour l'année, 1898.*

‡ Vice-Consul Dundas, "Report on German East Africa for the year 1901." *Dipl. and Cons. Reports*, No. 2,819, Ann. Ser. [Cd. 786-123], London, 1902, and Buchanan, "German Colonies for the year 1901-2." *Dipl. and Cons. Reports*, No. 2983, Ann. Ser. [Cd. 1386-60], 1903.

### German Empire.

The importance of the mining industry of the German empire is apparent from the following tables, which show that in 1902 its mines employed 603,675 persons, and produced 150 million tons of coal and brown coal, and nearly 13 million tons of iron ore, besides other minerals. The progress of mining during the last 30 years has been enormous. In 1871 the total value of minerals raised was rather more than £15,000,000 sterling; in 1902 it was £61,000,000 sterling. This rise is largely due to the increased output of coal.

*Amber.\**—The shores of the Baltic have been the principal amber-yielding region of the world for many centuries.

*Brown Coal.*—Deposits of brown coal are found in more or less abundance over nearly the whole of North Germany; the principal workings are in the provinces of Brandenburg and Saxony. The brown coal industry has greatly increased in importance since the manufacture of briquettes began.

*Coal.*—There are three principal coal-mining districts in Prussia: (1) The Lower Rhine and Westphalian Basin, which is by far the most important; (2) Silesia, and especially Upper Silesia; (3) the Rhenish district in the neighbourhood of Saarbrücken and Aix-la-Chapelle. Most of the coal is derived from seams of true Carboniferous age; near Hanover there are extensive workings in the Wealden beds.

The figures in Table 438 show that the output of coal in 1902 was a million tons less than in 1901.

In spite of the decrease in the output, the exports of coal from Germany increased from 17,928,352 tons in 1901 to 19,022,042 tons in 1902. Consul-General Oppenheimer says: "The competition of British coal continues very lively, and the German coal syndicates offer special terms in such districts in which the competition is keenest so that the British coal may eventually be ousted from the market." †

*Copper.*—The bulk of the copper is obtained by the large and important Mansfeld Company from a thin bed of cupriferous shale, which at the same time is silver-bearing.

*Iron Ore.*—Veins in the Siegen district and in the Duchy of Nassau yield spathose ore, brown iron ore, and hæmatite rich in manganese. These sources of supply are, however, of far less importance than the stratified ore of Jurassic age in Luxemburg and Lorraine. Indeed, the iron-field upon the confines of France and Germany is at the present moment the greatest ore-producer of Europe. It is estimated that Luxemburg possesses 14 sq. m. (37 sq. km.), Germany 160 sq. m. (414 sq. km.), and France 208 sq. m. (540 sq. km.) of iron territory, in which ore can be raised at a profit. The so-called "iron-ore formation" consists of five main beds of oolitic iron ore interstratified with marl and limestone, with an average thickness of 105 ft. (32 m.), of which rather more than one-half is available iron ore. The ore contains on an average 36 per cent. of iron and 1·7 per cent of phosphoric acid.‡

*Lead Ore.*—The lead ore comes chiefly from Upper Silesia, the Hartz, and Rhenish Prussia.

*Salts.*—In no country in the world is there such an abundance of potassium salts as in Germany. They are mined in the province of Prussian Saxony and the Duchy of Anhalt; of late years Hanover has had a share in the production of these important and not very widely spread minerals, and a mine in Brunswick added to the yield in 1897. Common salt and potassium chloride are likewise obtained in considerable quantities by evaporation of solutions pumped up from boreholes.

*Zinc Ore.*—Upper Silesia is the mainstay of the German zinc industry.

\* Dahms "Vorkommen und Verwendung des Bernsteins." *Zeitschr. f. p. Geologie*, Vol. IX., 1901, p. 201.

† Consul-General Oppenheimer, "Trade of the Consular district of Frankfort-on-Main for the year 1902." *Dipl. and Cons. Reports*, No. 3,042, Ann. Ser. [Cd. 1386-119], 1903, p. 35.

‡ Hofmann, "Das Vorkommen der oolithischen Eisenärze (Minette) in Luxemburg und Lothringen." *Glückauf*, Vol. XXXV., 1899, p. 640.





## GERMAN EMPIRE—continued.

TABLE 437.

PERSONS EMPLOYED at WELLS producing BRINE or other MINERAL SOLUTIONS during the Years 1901 and 1902.\*

Mineral Solution.	1901.			1902.		
	Men.	Women.	Total.	Men.	Women.	Total.
Sodium chloride ... ..	3,616	24	3,640	3,545	22	3,567
Potassium chloride ... ..	4,324	29	4,353	4,559	28	4,587
Sulphates or chlorides of sodium, potassium, magnesium, or aluminium. }	643	14	657	810	9	819
Total ... ..	8,583	67	8,650	8,914	59	8,973

For persons employed at quarries, see page 408.

TABLE 438.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1901 and 1902.\*

Mineral.	1901.		1902.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
<b>I.—COALS, ASPHALT, &amp;c.</b>				
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Asphalt ... ..	90,193	675	88,374	604
Brown coal ... ..	44,479,970	110,280	43,126,281	102,571
Coal ... ..	108,539,444	1,015,254	107,473,933	950,517
Graphite ... ..	4,435	232	5,023	174
Petroleum ... ..	44,095	2,950	49,725	3,351
Total value ... ..	—	1,129,391	—	1,057,217
<b>II.—SALTS.</b>				
Boracite ... ..	184	32	196	24
Kainite ... ..	1,498,569	21,666	1,322,633	19,210
Magnesium salts ... ..	2,230	16	1,169	9
Potassium salts, other than kainite ...	2,036,325	21,763	1,962,384	20,796
Rock salt ... ..	985,050	4,529	1,010,412	4,699
Total value ... ..	—	48,006	—	44,738
<b>III.—ORES.</b>				
Arsenic ore ... ..	4,035	311	3,959	307
Cobalt, nickel, and bismuth ores ...	10,479	742	12,433	754
Copper ore ... ..	777,339	24,299	761,921	20,431
Iron ore ... ..	12,115,003	62,583	12,833,522	54,109
Iron pyrites ... ..	157,433	1,142	165,225	1,285
Lead ore ... ..	153,341	14,141	167,855	13,436

\* Vierteljahrshefte zur Statistik des Deutschen Reichs; Jahrgang, 1903, Berlin, IV. Heft.

## GERMAN EMPIRE—continued.

TABLE 438—continued.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1901 and 1902—continued.

Mineral.	1901.		1902.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
III.—ORES—cont.	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Manganese ore ... ..	56,691	703	49,812	579
Quicksilver .. ...	3	300	—	—
Silver and gold ores ... ..	11,577	1,551	11,724	1,389
Tin ore ... ..	82	50	104	61
Uranium and tungsten ores ... ..	43	30	31	14
Vitriol and alum ores, other than iron pyrites.	1,056	6	785	6
Zinc ore ... ..	647,496	21,502	702,504	29,811
Total value ... ..	—	127,360	—	122,182
Total value for the German Empire in marks.	—	1,304,757	—	1,224,137
Total value for the German Empire in £ sterling.	—	£65,237,850	—	£61,206,850
Grand Duchy of Luxemburg—iron ore	4,455,179	9,416	5,130,069	11,622

TABLE 439.

QUANTITY and VALUE of MINERALS produced from BRINE, &c. WELLS during the Years 1901 and 1902.\*

Mineral Solution.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
1. Alkaline sulphates :—				
(a.) Potassium sulphate... ..	37,394	5,840	28,279	4,534
(b.) Potassium and magnesium sulphate.	15,612	1,146	18,147	1,405
(c.) Sodium sulphate ... ..	76,065	1,968	90,741	2,344
2. Earthy sulphates :—				
(a.) Aluminium sulphate ... ..	46,807	2,947	47,905	3,081
(b.) Alum... ..	4,145	392	4,108	432
3. Magnesium chloride ... ..	21,018	334	19,658	310
4. Magnesium sulphate ... ..	46,714	687	39,262	541
5. Potassium chloride ... ..	294,665	35,129	267,512	31,545
6. Salt (sodium chloride) ... ..	578,750	15,730	572,846	15,613
Total value in marks ... ..	—	64,173	—	59,805
„ „ £ sterling ... ..	—	£3,208,650	—	£2,990,250

\* Vierteljahrshefte zur Statistik des Deutschen Reichs ; Jahrgang, 1903, Berlin, IV. Heft.

## GERMAN EMPIRE—continued.

The following tables give the output and value of some of the more important minerals, classified according to the States in which they were produced.

TABLE 440.

*Brown Coal.*

State.	1901.*		1902.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Anhalt ... ..	1,365,950	4,167	1,278,112	4,058
Bavaria ... ..	25,224	97	27,337	104
Brunswick ... ..	1,436,314	4,609	1,307,867	4,040
Hesse ... ..	307,952	886	296,685	763
Prussia ... ..	37,491,412	90,426	36,228,285	83,475
Saxe Altenburg ... ..	2,146,976	5,486	2,181,661	5,433
Saxony ... ..	1,635,060	4,408	1,746,638	4,524
Other German States ... ..	71,082	201	59,696	174
Total value in marks ... ..	} 44,479,970 {	110,280	} 43,126,281 {	102,571
" " £ sterling ... ..		£5,514,000		£5,128,550

TABLE 441.

*Coal.*

State.	1901.*		1902.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Alsace-Lorraine ... ..	1,193,169	14,216	1,309,818	14,140
Bavaria ... ..	1,203,792	14,022	1,233,568	13,408
Prussia ... ..	101,203,807	924,556	100,115,315	867,735
Saxony ... ..	4,759,812	60,601	4,649,100	53,530
Other German States ... ..	178,864	1,859	166,132	1,704
Total value in marks ... ..	} 108,539,444 {	1,015,254	} 107,473,933 {	950,517
" " £ sterling ... ..		£50,762,700		£47,525,850

TABLE 442.

*Rock Salt.*

State.	1901.*		1902.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Anhalt ... ..	291,174	1,204	288,613	1,192
Prussia ... ..	353,557	1,674	359,006	1,734
Württemberg ... ..	273,556	1,331	284,814	1,413
Other German States ... ..	66,763	320	77,979	360
Total value in marks... ..	} 985,050 {	4,529	} 1,010,412 {	4,699
" " £ sterling ... ..		£226,450		£234,950

\* *Vierteljahrshäfte zur Statistik des Deutschen Reichs*; Jahrgang, 1902, Berlin, IV. Heft.

† " " " " " " " " 1903



GERMAN EMPIRE—continued.

TABLE 443.  
. Iron Ore.

State.	1901.*		1902.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Alsace-Lorraine ... ..	7,594,711	20,310	8,793,496	22,725
Bavaria ... ..	160,441	750	157,375	747
Brunswick ... ..	226,485	434	215,857	373
Hesse ... ..	163,470	1,707	174,439	1,438
Prussia ... ..	3,831,670	38,728	3,362,887	28,216
Saxe-Meiningen ... ..	69,212	282	74,625	316
Waldeck... ..	—	—	30,567	153
Other German States ... ..	69,014	372	24,276	141
Total value in marks... ..	{ 12,115,003 }	62,583	{ 12,833,522 }	54,109
" " £ sterling ... ..		£3,129,150		£2,705,450
Grand Duchy of Luxemburg ... ..	{ 4,455,179 }	9,416	{ 5,130,069 }	11,622
		£470,800		£581,100

TABLE 444.  
Silver and Gold Ores.

State.	1901.*		1902.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Total quantity and value in marks for German Empire ... ..	{ 11,577 }	1,551	{ 11,724‡ }	1,389
" " " £ sterling ... ..		£77,550		£69,450

According to a return§ of the mining branch of the great industrial insurance institution of the German Empire, which numbers more than half a million members, the deaths from accidents among persons employed in and about mines and smelting works have been as follows :—

TABLE 445.  
DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS in GERMANY.

Year.	Deaths which occurred in the same year as the accident.		Total Deaths, including those which took place after the close of the year in which the accident happened.	
	Number of Deaths.	Number of Deaths per 1,000 Persons Insured.	Number of Deaths.	Number of Deaths per 1,000 Persons Insured.
1891	977	2·32	1,033	2·45
1892	830	1·96	882	2·08
1893	920	2·19	971	2·31
1894	786	1·84	829	1·94
1895	912	2·12	960	2·23
1896	971	2·18	1,017	2·28
1897	961	2·05	1,000	2·13
1898	1,254	2·53	1,292	2·61
1899	1,060	2·03	1,096	2·10
1900	1,145	2·02	1,178	2·08
1901	1,289	2·12	1,310	2·16
1902	1,080	1·80	—	—

\* Vierteljahrshefte zur Statistik des Deutschen Reichs ; Jahrgang, 1902, Berlin, IV. Heft.  
† 1903  
‡ 94 kilos. of fine gold and 178,409 kilos. of fine silver were extracted from these ores at the Metallurgical Works in 1902.  
§ Achtzehnter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1902, Berlin, p. 39.

## GERMAN EMPIRE—continued.

TABLE 446.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1902.\*

Kind of Workings.	Average Number of Persons Insured.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Insured.
		Males.	Females.	Total.	
Brown coal mines ... ..	57,410	130	—	130	2·26
Coal mines ... ..	438,693	843	—	843	1·92
Ore mines and smelting works... ..	76,300	74	—	74	·97
Salt mines and brine works ... ..	21,694	24	—	24	1·11
Other mineral workings... ..	7,035	9	—	9	1·28
Total ... ..	601,132	1,080	—	1,080	1·80

TABLE 447.

ACCIDENTS CLASSIFIED so as to show whether they were due to the WORKMEN'S NEGLIGENCE, Year 1902.†

Section.	Accidents.								Total Number of Accidents.
	Owing to Danger Inherent to the Work itself.		By Defects in the Working.		Through Fault of Fellow Workman.		Through Fault of Injured Person.		
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
1. Bonn ... ..	1,072	71·66	2	0·13	52	3·48	370	24·73	1,496
2. Bochum ... ..	2,886	81·66	14	0·40	105	2·97	529	14·97	3,534
3. Clausthal ... ..	137	60·62	—	—	6	2·65	83	36·73	226
4. Halle ... ..	233	32·86	18	2·54	54	7·62	404	56·98	709
5. Waldenburg ... ..	138	77·09	1	0·56	2	1·12	88	21·23	179
6. Tarnowitz ... ..	423	27·20	3	0·20	72	4·60	1,059	68·00	1,557
7. Zwickau ... ..	207	60·70	8	2·35	18	5·28	108	31·67	341
8. Munich ... ..	86	85·15	—	—	5	4·95	10	9·90	101
Total ... ..	5,182	63·64	46	0·56	314	3·86	2,601	31·94	8,143

The main result of this table is that 32 per cent. of the accidents were due to the carelessness of the persons injured. Last year the percentage was 30.

\* *Achtzehnter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1902*, Berlin, 1903, pp. 34-37.

† *Ibid.*, p. 39.

GERMAN EMPIRE—continued.  
TABLE 448.  
PERSONS INJURED BY ACCIDENTS IN AND ABOUT QUARRIES, WHO RECEIVED COMPENSATION DURING THE 10 YEARS 1893 TO 1902.\*

Year	(a) Number, Age, and Sex of Persons Injured.							8 Per 1,000 Persons Insured.	(b) Cause of Accident.												(c) Consequence of the Injury.						Number of the dependent relatives of persons killed entitled to compensation.				
	Adults.		Young Persons Under 16.			7. Total.	9. Per 1,000 Persons Insured.		9. Motors, Belts and Gearing, Transmissions and Working Machines.	10. Cages, Lifts, Cranes, Hoists.	11. Steam Boilers and Steam Pipes.	12. Explosions.	13. Burns or Scalds from Hot Gases, Steam, &c.	14. Falls of Ground or of Materials.	15. Falls from Ladders, Steps, &c., out of Windows, &c., into Holes, &c.	16. Loading or unloading, Lifting, Carrying, &c.	17. Run over by Carts, Waggon, &c.	18. Railways, Run over, &c.	19. Ships, Boats, Barges, &c., Falling Overboard, &c.	20. Animals (Blows, Kicks, Bites, &c.) including all Accidents in Riding.	21. Handtools (Hammer, Axe, Pick, Spade, &c.)	22. Miscellaneous.	Deaths.		Lasting incapacity for Work.						27. Temporary Incapacity for Work.
			3. M.	4. F.	5. M.																		6. F.	7. Total.	23. Number.	24. Per 1,000 Persons Insured.	25. Complete.	26. Incomplete.			
	1893	227,500	1,168	—	7	—	1,175		5.2	62	19	13	57	6	383	135	171	62	112	7	8	168	22	187	0.82	26	735	227	133	325	11
1894	226,300	1,295	7	17	—	1,319	5.8	69	32	9	81	6	384	142	163	84	99	15	7	195	33	196	0.86	28	861	234	134	285	12	481	
1895	228,000	1,333	1	20	—	1,354	5.9	81	40	9	68	14	369	165	159	90	114	7	6	201	31	171	0.75	19	781	384	121	206	30	357	
1896	252,200	1,305	2	25	—	1,332	5.3	77	28	4	65	12	372	171	175	78	123	6	7	182	32	171	0.67	16	760	385	108	278	7	393	
1897	330,882	1,537	3	13	1	1,554	4.7	85	29	1	90	15	442	204	173	92	191	10	7	180	35	228	0.68	11	882	433	156	330	15	501	
1898	369,257	1,587	7	22	—	1,616	4.4	111	40	6	82	12	406	212	187	98	219	15	13	198	17	249	0.67	16	912	439	160	399	11	570	
1899	416,095	1,885	2	15	—	1,902	4.5	123	54	1	111	16	469	264	203	124	234	9	11	262	19	257	0.62	22	969	654	153	351	13	517	
1900	419,144	1,947	4	22	—	1,973	4.7	167	71	1	113	18	466	295	169	102	232	13	19	281	26	272	0.65	19	991	691	180	393	13	586	
1901	384,086	2,147	5	45	—	2,197	5.7	161	62	4	109	10	551	278	247	107	274	12	26	313	43	234	0.61	21	1,006	933	144	321	21	486	
1902	378,813	2,217	21	49	2	2,289	6.0	167	62	7	68	64	563	280	287	134	291	11	13	358	34	227	0.51	33	1,129	900	157	418	11	586	

\* *Verwaltungs-Bericht des Vorstandes der Steinbruchs-Berufsgenossenschaft für das XVII. Rechnungsjahr 1902*, Berlin, 1903, p. 8.  
The figures in Column 2 represent the total number of persons employed in a quarry at any time during the year for however short a period. The number of persons employed full time, reckoning 300 days' work a year for each person, is given as 149,992 in 1901 and 149,274 in 1902.  
The number of deaths in column 23 represents the number of cases in which compensation had been paid by the Insurance Board during the year, and differs slightly from the number reported as occurring during the year, which is stated as 231 in 1901 and 224 in 1902.  
The death-rate of the full time (300 days) workers was 1.5 for 1901 and also for 1902



Separate statistics have been obtained for the following States, forming parts of the German Empire, viz., Bavaria, Prussia, and Saxony.

BAVARIA.\*

TABLE 449.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1901 and 1902.

Kind of Mines or Mineral Workings.	1901.		1902.		Kind of Mines or Mineral Workings.	1901.		1902.	
	Men.	Women and Children.	Men.	Women and Children.		Men.	Women and Children.	Men.	Women and Children.
Barytes ...	162	418	141	317	Melaphyre...	†	†	1,681	2,648
Basalt ...	1,230	1,829	1,053	2,956	Ochre, &c. ...	121	201	113	240
Brown coal ...	159	250	135	316	Paving stones ...	§	§	75	192
Cement marl ...	469	145	265	627	Porcelain earth ...	79	193	107	78
Coal ...	7,118	13,694	7,365	15,504	Salt, rock ...	100	158	105	182
Copper ore ...	36	10	4	4	" from brine ...	241	691	241	702
Emery ...	8	25	9	26	Sand† ...	64	73	115	294
Feldspar ...	23	46	24	66	Sandstone† ...	1,359	3,396	3,809	7,842
Fireclay ...	550	1,592	653	1,364	Slates (roofing and slabs).	64	131	72	165
Fluorspar ...	22	69	38	82	Steatite ...	76	215	77	205
Granite† ...	3,508	6,047	3,742	7,055	Whetstone ...	15	8	23	10
Graphite ...	286	24	164	36	Zinc and Lead ...	17	—	—	—
Gypsum ...	21	11	63	105					
Iron ore ...	842	1,958	737	2,086					
Iron pyrites ...	40	94	38	105					
Limestone ...	1,569	2,524	1,610	2,701					
Lithographic stone	725	1,902	784	1,034	Total ...	13,904	35,704	23,243	46,942

TABLE 450.

QUANTITY and VALUE of MINERALS obtained during the Years 1901 and 1902.

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes ...	8,711	71,605	8,034	59,800
Basalt ...	414,921	659,030	689,334	1,420,689
Brown coal ...	24,439	94,171	26,429	100,295
Cement marl ...	76,663	255,728	178,301	444,168
Coal ...	1,078,150	13,213,862	1,102,230	12,552,415
Emery ...	366	13,824	225	10,000
Feldspar ...	788	7,658	447	3,813
Fireclay...	143,028	1,074,202	198,882	1,215,981
Fluorspar ...	5,220	28,300	5,460	39,495
Granite ...	168,573	1,974,831	252,901	2,510,176
Graphite ...	4,435	231,742	5,023	173,980

\* Return furnished by the Royal Bavarian Mining Department, Munich.

† Figures incomplete for 1901.

‡ Figures not given.

§ Included with Lithographic stone.

GERMAN EMPIRE.—BAVARIA—continued.

TABLE 450—continued.

QUANTITY and VALUE of MINERALS obtained during the Years 1901 and 1902—con

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Gypsum... ..	3,581	23,564	31,701	53,496
Iron ore... ..	158,820	727,557	157,375	746,986
„ pyrites ... ..	2,649	32,721	2,635	34,373
Limestone ... ..	356,239	753,945	597,055	1,419,663
Lithographic stone ... ..	9,500	931,000	9,020	789,150
Melaphyre ... ..	352,715	1,058,145	418,206	1,610,001
Ochre, &c. ... ..	84,929	409,540	13,947	139,311
Paving stones ... ..	1,550	30,500	7,739	143,260
Porcelain earth ... ..	35,450	116,561	92,073	215,252
Salt, rock ... ..	1,319	24,837	832	15,666
„ from brine ... ..	41,217	1,837,333	41,229	1,837,044
Sand ... ..	37,710	43,154	109,432	185,143
Sandstone ... ..	355,850	1,299,104	524,427	3,158,576
Slates (roofing and slabs) ... ..	1,024	48,482	1,210	58,320
Steatite ... ..	2,291	167,430	2,029	202,950
Whetstone ... ..	10	2,000	24	6,080
Total value in Marks ... ..	{ — }	25,130,826	{ — }	29,146,083
„ „ £ sterling ... ..		£1,256,541		£1,457,304

PRUSSIA.

TABLE 451.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1901 and 1902.\*

Kind of Mines or other Mineral Workings.	1902.				Total for preceding year
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal ... ..	15,591	11,349	17,402	44,342	48,801
Coal ... ..	313,716	—	97,607	411,323	408,375
Ore... ..	43,179	1,625	22,049	66,853	69,132
Other mineral workings ... ..	8,678	1,498	8,269	18,445	18,351
Total ... ..	381,164	14,472	145,327	540,963	544,659

\* Zeitschr. B. H. S. W., Vol. LL., p. 48.



GERMAN EMPIRE.—PRUSSIA—*continued.*

TABLE 452.

QUANTITY and VALUE of MINERALS obtained from MINES during the Years  
1901 and 1902.

Mineral.	1901.*			1902.†		
	Number of Mines.	Output.		Number of Mines.	Output.	
		Quantity.	Value.		Quantity.	Value.
I.—Coals and Asphalt.						
Asphalt ... ..	3	Metric Tons. 26,450	Marks. 264,500	3	Metric Tons. 28,035	Marks. 269,383
Brown coal ... ..	395	37,491,412	90,426,331	379	36,228,285	83,474,930
Coal ... ..	282	101,203,807	924,556,387	272	100,115,315	867,734,713
Petroleum ... ..	9	24,098	1,844,072	10	29,520	2,341,072
Total ... ..	689	138,745,767	1,017,091,290	664	136,401,155	953,820,098
II.—Salts.						
Boracite (pure) ... ..	—	164	28,791	—	172	21,094
Kainite ... ..	4	1,068,237	16,043,517	7	943,450	14,080,030
Magnesium salts ... ..	—	1,952	14,371	—	762	5,589
Potassium salts, other than kainite.	24	1,431,703	14,390,480	15	1,344,542	13,344,334
Rock salt ... ..	6	353,557	1,674,302	12	359,006	1,733,964
Total ... ..	34	2,855,613	32,151,461	34	2,647,932	29,185,011
III.—Ores.						
Arsenic ore ... ..	1	3,050	261,890	1	2,909	252,404
Cobalt ore ... ..	1	35	8,673	1	76	14,713
Copper ore ... ..	45	765,241	23,901,946	33	751,496	20,232,719
Gold and silver ore ... ..	1	6	39,759	1	18	183,441
Iron ore ... ..	373	3,831,669	38,728,203	332	3,362,887	28,216,052
Iron pyrites ... ..	5	148,457	1,055,151	6	155,410	1,185,352
Lead ore ... ..	147	139,285	13,949,598	109	152,282	13,217,996
Manganese ore ... ..	17	55,866	654,179	15	48,882	529,597
Nickel ore ... ..	3	9,922	197,510	2	11,816	212,588
Quicksilver ore ... ..	1	—	—	—	—	—
Vitriol ores and alum ores, other than iron pyrites.	1	611	2,873	—	220	1,319
Zinc ore ... ..	53	644,504	21,369,074	50	699,392	29,602,555
Total ... ..	648	5,598,646	100,168,856	550	5,185,388	93,648,736
Gross Total ... ..	1,371	147,200,026	1,149,411,607	1,248	144,234,475	1,076,653,845
Total value in £ sterling	—	—	£57,470,580	—	—	£53,832,692

\* *Zeitschr. B. H. S. W.*, Vol. L., p. 20.  
† " " " Vol. LI. p. 20.

GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 453.

QUANTITY and VALUE of SALTS obtained from BRINE WELLS, &c. during the Years 1901 and 1902.

Description of the Product.	1901.*					1902.†				
	Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.		Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.	
	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By- product.		Quantity.	Value.	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By- product.		Quantity.	Value.
L. Alkaline Sulphates :—			Metric Tons.	Metric Tons.	Marks.			Metric Tons.	Metric Tons.	Marks.
(a) Potassium sulphate ..	1	9	151,957	26,741	4,268,615	1	10	88,102	19,643	3,152,214
(b) Potassium and mag- nesium sulphate.	—	7	7,852	9,116	774,956	—	9	28,872	12,617	966,587
(c) Sodium sulphate ..	8	9	39,656	58,915	1,481,531	9	9	45,233	71,991	1,772,051
2. Earthy Sulphates :—										
(a) Aluminium sulphate..	5	—	10,161	11,117	744,554	5	—	10,115	11,098	737,482
(b) Alum .. .. .	1	2	896	1,419	139,883	1	1	898	1,392	146,649
3. Magnesium chloride ..	—	3	19	8,589	151,221	—	3	14	8,042	143,998
4. Magnesium sulphate ..	—	9	3,671	25,495	406,159	—	8	2,381	22,106	332,589
5. Potassium chloride ..	11	3	1,163,236	194,964	23,078,695	16	3	1,002,487	166,671	20,632,714
6. Salt (sodium chloride) ..	34	5	101,156	290,869	7,511,048	34	5	89,966	291,296	7,333,272
Total .. .. .	63	47	1,478,694	627,225	38,496,362 £1,924,818	66	48	1,268,068	604,856	34,817,556 £1,736,877

TABLE 454.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1902 and preceding Year.‡

Kind of Mines or other Mineral Workings	1902.				Total for preceding year.
	Number of Deaths.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal ... ..	50	16	30	96	122
Coal ... ..	708	—	110	818	956
Ore ... ..	48	2	10	60	81
Other mineral workings ... ..	23	3	5	31	50
Total ... ..	829	21	155	1,005	1,209

\* Zeitschr. B. H. S. W., Vol. L, p. 21.  
† " " Vol. LI, p. 21.  
‡ " " Vol. LI, p. 51.



GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 455.

DEATH-RATES from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1902 and preceding Year.\*

Kind of Mines or other Mineral Workings.	1902.				Total for preceding year.
	Death-rate per 1,000 Persons Employed.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal ... ..	3.21	1.41	1.72	2.16	2.50
Coal ... ..	2.26	—	1.13	1.99	2.34
Ore ... ..	1.11	1.23	.45	.90	1.17
Other mineral workings ... ..	2.65	2.00	.60	1.68	2.73
Total ... ..	2.17	1.45	1.07	1.86	2.22

TABLE 456.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS, classified according to kind of MINERAL WORKED, and cause of ACCIDENT, during the Year 1902, and the DEATH-RATES for 1901 and 1902.†

Cause of Accident.	Deaths from Accidents					Death-rate per 1,000 Persons Employed.	
	Brown Coal Mines.	Coal Mines.	Ore Mines.	Other Mineral Workings.	Total.	1902.	1901.
Blasting ... ..	—	26	2	4	32	.08	.17
Falls of ground ... ..	26	340	18	7	391	1.03	1.12
On inclines and in intermediate shafts.	—	136	6	5	147	.38	.38
In shafts ... ..	11	95	19	5	130	.34	.31
In levels ... ..	4	42	—	1	47	.12	.15
Explosion of fire-damp, coal dust, or gases generated by fires.	—	10	—	—	10	.03	.15
Suffocation by natural gases (without explosion), or gases generated by fires (without explosion), or blasting.	3	4	—	1	8	.02	.16
Machinery... ..	1	—	1	—	2	.01	.01
Irruptions of water	1	1	—	—	2	.01	.02
In open workings	16	—	2	3	21	1.45	1.82
On surface... ..	30	110	10	5	155	1.07	1.24
Sundries ... ..	4	54	2	—	60	.16	.14
Total ... ..	96	818	60	31	1,005	1.86	2.22

\* Zeitschr. B. H. S. W., Vol. LI., p. 51.  
† " " " pp. 48-51.



GERMAN EMPIRE.—PRUSSIA—continued.

The Prussian Commission upon Accidents from Falls of Stone and of Coal has issued two more parts of its Report.\* Part V. contains the reports of the members of the Commission who visited Northern France, Belgium, Saxony, and Austria; the book is copiously illustrated and is full of valuable information.

Part VI. contains various interesting reports about methods of working, and about trials which are in progress with the object of diminishing the death-rate from falls. The Courrières system of using protecting bars meets with approval, and a marked gain in safety is recorded at a large colliery in Silesia † where the method was made obligatory in 1902. Acetylene lamps are beginning to be used in various mines, both fiery and non-fiery, in Germany and Austria.

Dr. Haldane has reported ‡ upon the prevalence of ankylostomiasis in Westphalian collieries and upon the means which are being taken to combat the disease.

Interesting details concerning mining education in Germany are contained in a recent Foreign Office Report.§

SAXONY||.

TABLE 459.

PERSONS EMPLOYED at MINES during the Years 1901 and 1902.

Kind of Mines.	1901.			1902.		
	Males.	Females.	Total.	Males.	Females.	Total.
Brown coal ... ..	3,296	149	3,445	3,355	133	3,488
Coal ... ..	26,060	395	26,455	25,672	349	26,021
Ore ... ..	3,797	—	3,797	3,585	—	3,585
Total ... ..	33,153	544	33,697	32,612	482	33,094

According to the Saxon Year-book, 79,535 persons were dependent upon the 33,094 workers in and about mines in 1902.

TABLE 460.

QUANTITY and VALUE of MINERALS obtained during the Years 1901 and 1902.

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes ... ..	410	5,454	72	2,409
Bismuth, cobalt, and nickel ores ...	522	536,207	534	525,925
Brown coal ... ..	1,635,060	4,408,178	1,746,638	4,523,657
Coal ... ..	4,683,849	60,961,769	4,407,255	53,530,322

\* *Die Verhandlungen und Untersuchungen der Preussischen Stein-und Kohlenfall-Commission.* Berlin, 1902 and 1903 (v. Heft and vi. Heft).

† Page 571.

‡ *Report to the Secretary of State for the Home Department on Ankylostomiasis in Westphalian Collieries.* [Cd. 1813.] London, 1903.

§ *Russ—“Report on Instruction in Mining and Metallurgy in Germany.” Dipl. and Cons. Reports.* No. 597 Misc. Series. 1903. [Cd. 1767-1].

|| *Jahrbuch für das Berg-und Hüttenwesen im Königreiche Sachsen, Jahrgang 1902,* Freiberg, pp. B65, 67, and 184.



GERMAN EMPIRE—continued.

TABLE 460.—continued.

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Fluor spar ... ..	1,615	12,113	2,947	21,920
Iron ore ... ..	4,198	37,960	264	1,685
Limestone, &c. ... ..	—	26,963	—	28,060
Manganese ore ... ..	—	—	2	84
Ochre and umber ... ..	61	2,081	58	1,616
Pyrites (arsenical, iron, and copper)...	7,119	99,050	7,636	110,831
Quartz, mica, and uranium ore ...	281	18,301	240	14,845
Silver ore ... ..	11,565	1,503,183	11,687	1,185,101
Tin ore ... ..	82	60,671	104	72,642
Wolfram ... ..	42	28,965	31	14,122
Zinc ore ... ..	29	548	11	1,150
Specimens ... ..	—	1,469	—	1,679
Total value in marks ...	—	67,702,912	—	60,036,048
„ „ „ £ sterling ...	—	£3,385,145	—	£3,001,802

TABLE 461.

DEATHS and DEATH-RATES from ACCIDENTS at MINES during the Years 1901 and 1902.

Kind of Mines.	Deaths from Accidents.		Death-rate* per 1,000 Persons Employed.	
	1901.	1902.	1901.	1902.
Brown coal ... ..	8	12	2·35	3·50
Coal ... ..	37	29	1·41	1·13
Ore ... ..	3	5	·80	1·41
Total and average ... ..	48	46	1·44	1·41

\* In calculating the death-rate the persons employed in commercial work above ground, numbering 372 in 1902, are excluded.

GERMAN EMPIRE.—*continued.*

## German South-West Africa.\*

The existence of large deposits of copper ore in the Otavi district has been confirmed by prospecting.

## Greece.

Greece is well supplied with numerous metallic ores, marble and other valuable minerals, and the mineral resources of the country are described at some length in a recent Consular report,† based upon descriptions given by Cordella.

*Emery.*—Naxos has long been famous for its emery; the trade in emery is a Government monopoly. The quantity exported in 1902 was 4,315 metric tons, 2,276 of which were shipped to the United States.‡

*Iron and Manganese.*—The ores of these two metals occur and are worked in the Laurium district, and in Grammatikon, Siphnos, Seriphos and Milos. Large quantities of iron ore have recently been discovered.

*Magnesite.*—Rich deposits of this mineral are a source of wealth to the Island of Eubœa.

*Marble.*—The marble industry of Greece is of considerable importance, and many of the quarries known to the ancients are being re-worked by English companies, viz., at Larissa and Pentelicon on the mainland, and in the islands of Skyros, Eubœa, and Tinos.

*Salt.*—This is obtained from sea water at Anavyssos, near Laurium, and in the island of Leucados. The industry is a Government monopoly.

*Sulphur.*—Among other mineral products Milos supplies sulphur.

*Zinc.*—Calamine and blende occur with lead ore in the Laurium district.

TABLE 462.

PERSONS EMPLOYED at MINES during the Year 1900.§

	Year.			Total Under and Above Ground.
	1900	...	...	9,500

\* Buchanan, "Report on the German Colonies for the Years 1901-02." *Dipl. and Cons. Reports*, No. 2,983, Ann. Ser. [Cd. 1386-60], London, 1903, p. 13.

† Bennett "Report on the Mineral Resources of Greece." *Dipl. and Cons. Reports*, No. 576 Misc. Ser. [Cd. 787-12], London, 1902, with two maps.

‡ Consul Cottrell "Trade of the Cyclades for the year 1902." *Dipl. and Cons. Reports*, No. 2957, Ann. Ser. 1903, [Cd. 1386-34], p. 7.

§ Official Return furnished by the Bureau of Mines, Athens. Later figures not available.

GREECE—continued.

TABLE 463.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.\*

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chromite ... ..	4,580	183,200	11,680	467,200
Emery ... ..	5,691	606,091	4,727	503,425
Gypsum ... ..	37	3,330	10	900
Iron ore ... ..	501,592	5,015,920	546,409	5,464,090
Lead (argentiferous pig lead) ...	17,644	7,939,800	15,668	7,050,600
„ ore... ..	14,787	547,119	19,527	722,499
Lignite ... ..	12,670	126,900	8,546	85,460
Magnesite ... ..	13,507	162,084	32,562	390,744
Manganese ore ... ..	18,076	542,280	14,962	448,860
Millstones ... .. Pieces	16,400	41,000	13,000	32,500
Salt from sea water ... ..	23,079	461,580	25,000	500,000
Sulphur ... ..	2,336	210,240	1,391	125,190
Zinc ore ... ..	20,926	1,883,340	18,020	1,621,800
Total value in francs ... ..	—	17,722,884	—	17,413,268
„ „ £ sterling ... ..	—	£708,915	—	£696,531

TABLE 464.

DEATHS from ACCIDENTS at MINES during the Year 1900.†

Year.	Total Under-ground and Above-ground.	Death-rate per 1,000 Persons Employed.
1900 ... ..	9	·95

Greenland. (See DENMARK.)

\* Official Return furnished by the Bureau of Mines, Athens.  
† Later information not available.



## Guatemala.\*

The following minerals are found in different parts of the Republic, viz., the ores of antimony, copper, gold, iron, lead, manganese, silver and zinc, besides coal, lignite, graphite, gypsum, marble, mica, salt, sulphur, talc, and turquoises.

Though mines were a source of great revenue to Church and State between 1627 and 1820, when Guatemala was a colony of Spain, the mineral industries at the present day are unimportant.

## Hayti.†

Coal has been found in various districts, and a little gold washing done in the North of the Island. Copper and Iron were worked for a few months near Gonaïves, apparently with satisfactory results.

## Herzegovina. (See AUSTRIA-HUNGARY.)

## Holland.‡

Holland possesses immense peat bogs,§ which produce about 100 million hectolitres of good fuel annually. Since 1893 the turbaries have been further utilized for making peat litter. There are now nine factories producing it; they employ about 2,500 persons, and their total output is more than 220,000 tons of peat litter a year.

There are coal mines at Heerlen and Kerkrade||; and underground stone quarries are worked at Maastricht and Valkenberg.

TABLE 465.

PERSONS EMPLOYED at MINES during the Years 1901 and 1902.

Year.	Under-ground.			Above-ground.			Total Under-ground and Above-ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
1901 ...	965	—	965	399	—	399	1,364
1902 ...	1,159	—	1,159	420	—	420	1,579

\* Consul Trayner, "Trade, Agriculture and Finance of Guatemala for the Year 1899," *Dipl. and Cons. Reports*, No. 2,488, Ann. Ser., 1900 [Cd. 1-125] pp. 27-32.

† Acting Consul-General Wardrop, "Trade of the Republic of Hayti for the Year 1901," *Dipl. and Cons. Reports*, No. 2,927, Ann. Ser., 1902 [Cd. 1,386-4], p. 11.

‡ Official Returns furnished by the Government of the Netherlands.

§ Rommenhölter, *Mouvement du Commerce et de l'industrie des pays-Bas durant l'exercice 1898*. Rotterdam, 1899, p. 122.

|| Büttgenbach, "Die Geologie des alten Herzogthums Limburg," *B.u.h. Zeitung*, Vol. LVII., 1898, p. 363.

HOLLAND—*continued.*

TABLE 466.

PERSONS EMPLOYED at MINERAL WORKINGS other than MINES during the Years  
1901 and 1902.

Year.	Under-ground.			Above-ground.			Total Number of Persons Employed in and about Mineral Workings other than Mines.
	Males.	Females.	Total.	Males.	Females.	Total.	
1901 ...	50	—	50	50	—	50	100
1902 ...	50	—	50	40	—	40	90

TABLE 467.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
		Florins.		Florins.
Building stone ... <i>Cubic Metres</i>	6,000	12,000	8,000	16,000
Coal ... <i>Metric Tons</i>	312,717	1,862,476	399,133	2,247,005
Total value in Florins ...	—	1,874,476	407,133	2,263,005
" " £ sterling ...	—	£156,206	—	£188,584

TABLE 468.

DEATHS from ACCIDENTS at MINES during the Years 1901 and 1902.

Year.	Under-ground.			Above-ground.			Total Number of Deaths Under and Above Ground.	Death-rate per 1,000 Persons Employed.	
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Under and Above Ground.
1901	2	—	2	—	—	—	2	2·07	1·47
1902	2	—	2	—	—	—	2	1·73	1·27

There were no fatal accidents at the underground stone quarries in 1901 and 1902.



Although there is a marked improvement in the value of the output in 1901 compared with that of 1900, it appears from the Consular report that foreign labour and capital are needed, and that some inducements should be held out to colonists by the Government in order to make the mining industry advantageous to the Republic. The exports of minerals during the two years ending 30th June, 1900 and 1901, respectively, were as follows :—

TABLE 469.

Mineral.	1900.	1901.
	Value.	Value.
Copper ... ..	£ 296	£ 111
Gold ... ..	4,001	10,987
Ore ... ..	3,247	5,504
Salt ... ..	—	1,248
Silver { Bar ... ..	63,135	114,965
{ Coined ... ..	28,434	25,714

## Indo-China.

### ANNAM.

Annam and Tong-King possess large deposits of coal, iron ore, and argentiferous lead ore; besides having also asbestos, graphite, kaolin, and marble, and the ores of antimony, copper, gold, manganese, nickel, quicksilver, and tin.†

The "Société des houillères de Tourane" obtained 2,300 tons of coal in 1898 from its collieries, which are situated at Nong-son.‡ The present output of the Nong-son coal mines is at the rate of 100 tons a day.§

Iron ore|| is being smelted on a very small scale by the natives at Nho-Lam in the province of Quang-nam.

### COCHIN CHINA.¶

6,200 kilograms of jet, valued at 12,400 francs, were obtained from mines in the island Phu-Quoc in the year 1895; but the mines do not appear to have been worked since, as no quantity is reported in the French statistics. In 1901, 2,502 tons of salt valued at £4,050 were produced.\*\*

### TONG-KING.†† (See also ANNAM.)

The "Société Française des Charbonnages du Tonkin" exported 151,461 tons of coal, valued at 3,029,000 francs in 1902; the quantity exported in 1901 was 188,924 tons. At the Hongay Mines, 2,500 persons are employed.§

\* Consul Campbell, "Trade of Honduras for the years 1899-1900 and 1900-1901." *Dipl. and Cons. Reports*, No. 2,756, Ann. Ser., 1902 [Cd. 786-60], pp. 5 and 7.

† *B.M.A. Zeitung*, Vol. LVIII., 1899, p. 292.

‡ *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1899*, p. 86.

§ Consul Little, "Trade of Indo-China for the year 1902." *Dipl. and Cons. Reports*, No. 3,117, Ann. Ser., 1904 [Cd. 1766-51].

¶ Consul Tremleff, "Trade of Saigon and District for the Year 1897." *Dipl. and Cons. Reports*, No. 2,060, Ann. Ser., 1898 [C. 8648-82].

¶ *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1896*, p. 76.

\*\* Consul Tremleff, "Trade of French Indo-China for the year 1901." *Dipl. and Cons. Reports*, No. 2,834, Ann. Ser., 1902, [Cd. 786-138], p. 6.

†† Return furnished by the French Government and published in *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1902*, p. 84.



INDO-CHINA.—TONG-KING—*continued.*

Copper of good quality is produced from the mines in the provinces of Sontay, Langson, and Laokay.

Iron mines are numerous and productive in the provinces of Hanoy, Thainguayen\* and Sontay.

Deposits of Nickel have been discovered in the province of Tuyenquang\*.

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Italy.

An excellent summary† of the mineral industries of Italy is appended to the catalogue of the exhibits made by the Government at the Paris Exhibition of 1900. In a few words, the nature of the principal kinds of mines and quarries may be stated as follows:—

Sulphur is the most important mineral raised in the kingdom, and the bulk of it is obtained from Sicily. Next come zinc and lead ore; these are far more largely worked in Sardinia than in the peninsula itself. Again, in the case of iron ore, it is an island, Elba, which is the mainstay of the industry. England absorbed four-fifths of the Elban output in 1902, and the remainder went to France, Italy, and Holland.‡ The marble quarries of the Apuan Alps have long been a source of wealth to the country.

The following are a few particulars concerning some of the minerals:—

*Alunite.*—Quarrying natural alum-stone is a very old industry in the Tolfa hills north-east of Civita Vecchia. The open workings have now given place to underground mining, but the total output at the present day amounts to only a few thousand tons annually.

*Asphalt.*—A large quantity of bituminous limestone is quarried at Ragusa Superiore in the province of Syracuse. The principal seam is from 13 feet to 20 feet (4 to 6 m.) in thickness, and contains from 16 to 50 per cent. of bitumen.

*Boric Acid.*—The amount of boric acid produced from the natural steam-puffs (*soffioni*) in the provinces of Pisa and Grosseto varies from two to three thousand tons yearly.

*Coal.*—Italy greatly lacks supplies of fossil fuel. Its total output in 1902 was only 413,810 tons, of which more than one-half was lignite from Tuscany. There is a little anthracite in Tuscany, in the Val d'Aosta and in Umbria.

*Copper.*—The principal mines are in Tuscany.

*Gold.*—The gold veins in the flanks of Monte Rosa were worked by the Romans, and still continue to supply small quantities of the precious metal.

*Granite.*—Piedmont boasts of excellent red granite and white granite, and the quarries at Baveno and Mont'Orfano on the Lago Maggiore are worked upon an extensive scale.

*Iron.*—The thick deposits of iron ore in the Island of Elba have been worked for many centuries, and are not yet exhausted. The ore is obtained in open quarries, is loaded at once into barges, and then transhipped into large steamers, which convey it to England, France, and Holland. But a total output of only 240,705 tons is small compared with that of other iron-producing countries. Two blast furnaces have lately been erected at Portoferraio, with the object of treating some of the second class ore on the spot.‡

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\* Consul Little, "Trade of Indo-China for the year 1902," *Dipl. and Cons. Reports*, No. 3117, Ann. Ser., 1904 [Cd. 1766-51].

† *Catalogo della Mostra fatta dal Corpo Reale delle Miniere all'Esposizione Universale del 1900 a Parigi*. Rome, 1900.

‡ *Rivista del Servizio Minerario nel 1902*. Roma, 1903, p. 188.



## ITALY—continued.

**Lead and Zinc.**—Sardinia is remarkable for its deposits of the ores of lead and zinc. Malfidano, in the province of Cagliari, is the most important zinc mine in the island. It employs 2,000 workmen, and produces annually on an average 51,500 tons of zinc ore, worth nearly £150,000.

**Marble.\***—The well-known Carrara marble is obtained from beds of crystalline limestone of Triassic age, which in places attain the enormous thickness of more than 3,000 feet (1,000 m.). In addition to the finest white statuary marble, the quarries furnish many coloured varieties, each known in commerce by its special name.

The importance of the industry may be gauged by the fact that the quarries and dressing establishments of the Apuan Alps gave work to 10,233 persons in 1902, or about the same number as are employed in all the open slate quarries of North Wales.

**Quicksilver.**—Cinnabar is obtained at Monte Amiata in Tuscany.

**Salt.**—The deposits of rock salt worked in Sicily belong to the Upper Miocene period, and lie geologically above the sulphur-bearing rocks. The Sicilian mines produce from 12,000 to 15,000 tons a year, but this output might be very largely increased. Salt is obtained from sea water by solar evaporation, and especially in Sardinia and Sicily. The total output of sea salt in 1902 was 424,239 tons.

**Sulphur.**—The sulphur of Sicily is found in seams and lenticular masses in rocks of Upper Miocene age, and mainly in the provinces of Caltanissetta and Girgenti. In the year 1902 there were 898 mines at work, employing 32,045 workmen and the output of sulphur-bearing rock was 3,331,435 tons. The amount of sulphur obtained was 510,332 tons.

The proportion of the total output of sulphur extracted by the old-fashioned kilns (*calcaroni*) goes on diminishing from year to year. Eleven years ago 74·5 per cent. of the total output was obtained in this manner, 17 per cent. by kilns with communicating chambers, and 8·5 per cent. by steam apparatuses; last year the corresponding proportions were 33·4, 53·4 and 12·8 per cent. A new form of kiln, known as the Sanfilippo kiln, has been lately introduced with advantage for treating the fine mineral (*sterri*).†

**Volcanic Lava and Ash.**—Basaltic lava is quarried on a large scale at the foot of Vesuvius, and so is volcanic ash known as “*pozzolana*.” Similar products are obtained near Rome. The Island of Lipari produced 9,928 tons of pumice stone in 1902.

TABLE 470.

NUMBER OF MINERAL WORKINGS, VALUE OF OUTPUT, and NUMBER OF PERSONS EMPLOYED in the Years 1901 and 1902.‡

Kind of Workings,	1901.			1902.		
	Number at Work.	Total Value of Output.	Number of Persons Employed.	Number at Work.	Total Value of Output.	Number of Persons Employed.
Mines, &c. ... ..	1,619	Lire. 84,694,888	67,665	1,580	Lire. 77,965,597	63,270
Quarries ... ..	11,441	37,201,903	56,948	11,495	40,132,305	57,950
Turbaries ... ..	54	421,001	1,066	51	380,544	855
Sea salt ... ..	65	2,685,981	2,799	65	2,873,954	2,877
Total ... ..	—	Lire 125,003,773 £ sterling 5,000,151§	128,478	—	Lire 121,352,400 £ sterling 4,854,096§	124,952

\* Consul Keene, “Trade of Consular District of Genoa for the year 1901.” *Dipl. and Cons. Reports*, No. 2,820, Ann. Ser. [Cd. 786-124]. London, 1902, p. 36.

† *Rivista del Servizio Minerario nel 1902*, p. 116 and plate.

‡ *Op. cit.* nel 1901, pp. xxxiv., xxxix., lix., nel 1902, pp. xxviii., xxxiii., and liii.

§ Value calculated at 25 lire = 1l. sterling.

## ITALY—continued.

TABLE 471.

NUMBER OF PERSONS EMPLOYED in and about MINES and other MINERAL WORKINGS (exclusive of Quarries, Turbaries, and Sea Salt Workings) during the Years 1901 and 1902,\* classified according to mineral wrought.

Kind of Mines or other Mineral Workings.	1901.		1902.	
	Number of Mines or Workings.	Number of Persons Employed.	Number of Mines or Workings.	Number of Persons Employed.
Alum-stone ... ..	1	99	1	99
Antimony ore ... ..	25	368	11	267
Arsenic ore ... ..	1	4	—	—
Asphalt, &c. ... ..	11	1,759	10	924
Boric acid ... ..	12	381	12	375
Copper ore ... ..	47	2,445	29	2,066
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	82	3,897	85	4,190
Gas, carburetted hydrogen ... ..	(a)	(a)	(a)	(a)
Gold ore ... ..	27	153	17	411
Graphite ... ..	47	301	35	307
Iron ore ... ..	51	1,783	44	1,673
Iron pyrites (cupreous) ... ..	32	1,049	55	1,114
Lead ore ... ..	(b)	(b)	(b)	(b)
Manganese ore ... ..	9	106	9	100
Manganese and iron ore ... ..	4	219	4	226
Mineral waters ... ..	(a)	(a)	(a)	(a)
Nickel and cobalt ore ... ..	(c)	(c)	—	—
Petroleum ... ..	15	418	18	466
Quicksilver ... ..	13	829	13	878
Rock salt ... ..	22	403	20	396
Salt from springs ... ..	(a)	(a)	(a)	(a)
Silver ore ... ..	4	464	5	450
Sulphur ... ..	945	35,618	962	35,080
Zinc ore ... ..	271	17,369	250	14,248
Total ... ..	1,619	67,665	1,580	63,270

\* *Rivista del Servizio Minerario*, nel 1901, pp. xxii., xxvii., xxviii., nel 1902, pp. xv., xx., xxi.

(a) Included with petroleum.

(b) Included with zinc ore.

(c) Included with copper ore.



## ITALY—continued.

TABLE 472.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, TURBARIES, and SALT WORKS during the Years 1901 and 1902.\*

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Lire.	Metric Tons.	Lire.
Alum-stone ... ..	4,900	58,800	8,200	61,500
Antimony ore ... ..	8,818	342,565	6,116	258,386
Arsenical pyrites ... ..	6	480	—	—
Asphalt, &c. ... ..	104,111	1,308,814	64,245	759,145
Boric acid ... ..	2,558	972,040	2,763	884,160
Copper ore ... ..	108,120	3,420,653	101,142	2,789,716
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	426,377	3,375,560	414,569	3,348,861
Gas, carburetted hydrogen (cubic metres).	1,350,921	51,933	1,519,703	56,840
Gold ore... ..	890	40,600	1,215	51,348
Graphite ... ..	10,313	296,055	9,210	179,670
Iron ore ... ..	232,299	3,672,728	240,705	3,835,066
" " manganiferous ... ..	24,290	301,196	23,113	286,601
Iron pyrites (cupreous) ... ..	89,376	1,767,487	93,177	1,565,932
Lead ore ... ..	(a) 53,734	9,213,471	42,330	5,687,293
Manganese ore ... ..	2,181	83,170	2,477	103,740
Mineral waters ... ..	30,881	411,686	30,813	411,278
Peat ... ..	28,233	421,001	25,448	380,544
Petroleum ... ..	2,246	671,065	2,633	778,163
Quicksilver ... ..	38,614	1,503,100	44,261	1,234,158
Rock salt ... ..	23,054	350,486	23,677	382,638
Salt from springs ... ..	10,690	308,446	10,581	300,534
Salt, sea ... ..	401,443	2,685,981	424,239	2,873,954
Silver ore ... ..	511	355,492	421	277,681
Sulphur, rock ... ..	3,726,916	43,819,718	3,581,671	42,650,944
Zinc ore ... ..	135,784	12,369,343	(b) 149,965	12,061,943
Produce from quarries (value) ...	—	37,201,903	—	40,132,305
Total value in lire ... ..	—	125,003,773	—	121,352,400
" " £ sterling ... ..	—	£5,000,151	—	£4,854,096

TABLE 473.

ACCIDENTS at MINES, arranged according to CAUSES, during the Years 1901 and 1902.†

Cause.	1901.					1902.				
	No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.		No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.	
				Per 1,000 Persons Employed.	Per 1,000,000 liras' worth of Mineral produced.				Per 1,000 Persons Employed.	Per 1,000,000 liras' worth of Mineral produced.
Falls of ground ...	126	72	86	1·06	·85	115	53	80	·84	·68
Suffocation by gases, explosions, and fires.	24	23	24	·34	·27	15	15	15	·24	·19
Falling down shafts, &c., and miscellaneous.	79	25	55	·37	·30	62	14	49	·22	·18
Blasting ... ..	17	6	18	·09	·07	17	4	19	·06	·05
Total ... ..	246	126	183	1·86	1·49	209	86	163	1·36	1·10

\* *Rivista del Servizio Minerario nel 1901*, pp. xxvii., xxxiv., and lix., and *nel 1902*, pp. xx., xxviii., liii. and lvi.

† Ditto, *nel 1901*, p. lxxii. and *nel 1902*, p. lxii.

(a) Including 10,315 tons of lead and zinc ore, of the value of 111,600 lire.

(b) Including 18,000 tons of copper, lead and zinc ore, of the value of 360,000 lire.



## ITALY—continued.

TABLE 474.

ACCIDENTS at QUARRIES, arranged according to CAUSES, during the Years 1901 and 1902.\*

Cause of Accident.	1901.				1902.			
	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed.
Falls of ground ... ..	21	13	10	·23	47	42	29	·72
Falling down workings, and miscellaneous.	28	9	22	·16	23	11	12	·19
Blasting ... ..	4	2	4	·03	1	—	1	—
Total ... ..	53	24	36	·42	71	53	42	·91

## Italian Possessions. (See ERITREA.)

## Ivory Coast.

The mining industry of the Ivory Coast is now attracting considerable attention. Gold is obtained both from quartz reefs and from detrital deposits. The quantity of gold dust exported in 1901 was valued at £2,569.† Fossil gum opal is fairly abundant near Thiassalé and other places.

## Japan.

In addition to its well-known deposits of coal and copper ore, Japan is said to possess great wealth in the ores of antimony, gold, lead, manganese, silver, and zinc, besides petroleum and sulphur.

The most important coal mines are upon the Island of Kiushiu; the total output is increasing rapidly, and is about equal to that of India or Australia. More than 3½ million tons of coal were exported in 1900.‡

Alluvial deposits of gold are being worked energetically on the island of Hokkaido,§ and gave an output of 31,089 ozs. in 1901. Gold also occurs in Formosa; the mines and alluvial diggings are situated in the neighbourhood of Kelung, and their output in 1902 was 48,400 ozs.||

Petroleum ¶ is obtained from wells in the Echigo district, on the West Coast of Japan. The output for 1899 is estimated at 9 million gallons. Oil-fields likewise exist on the Island of Hokkaido. §

The Island of Formosa produced 48,560 tons of salt in 1901. The trade is a Government monopoly.\*\*

Sulphur is now being worked on a large scale on the volcanic island of Etrofu in the extreme north of Japan; 10,000 tons were obtained in 1900.†† Formosa likewise furnishes sulphur.

\* *Rivista del Servizio Minerario nel 1901*, p. lxxv, and *nel 1902*, p. lxvi.

† Acting Consul Mackie, "Trade of Senegal and Dependencies for the year 1902." *Dipl. and Cons. Reports*, No. 3,089, Ann. Ser., 1903 [Cd. 1,766-23], pp. 23-25.

‡ A. H. Lay, "Trade of Japan for the year 1902." *Dipl. and Cons. Reports*, No. 2,595, Ann. Ser., 1901.

§ Forster, "Trade of Hokodate for the year 1902." *Dipl. and Cons. Reports*, No. 3,030, Ann. Ser., 1903 [Cd. 1386-107], p. 13.

|| Consul R. de B. Layard, "Trade of North Formosa for the year 1902." *Dipl. and Cons. Reports*, No. 3,054, Ann. Ser., 1903 [Cd. 1386-131], p. 14.

¶ Consul Hall, "Trade of Hiogo and Osaka for the year 1899." *Dipl. and Cons. Reports*, No. 2,564, Ann. Ser., 1901 [Cd. 429-22], p. 7.

\*\* Consul Kenny, "Trade of South Formosa for the years 1900 and 1901." *Dipl. and Cons. Reports*, No. 2,796, Ann. Ser., 1902, p. 10.

†† Crawford, "Sulphur Mining in the North Pacific." *Cassier's Mag.*, Vol. xix., 1901, p. 311.

JAPAN—continued.

TABLE 475.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1900 and 1901.\*

Kind of Workings.	Persons Employed in the Year.	
	1900.	1901.
Coal Mines ... ..	70,508	75,230
Metal Mines ... ..	54,805	63,980
Other Non-metallic Mines ...	5,698	6,545
Placer Mining ... ..	9,835	10,643
Total ... ..	140,846	156,398

TABLE 476.

QUANTITY and VALUE of MINERALS and METALS produced during the Years 1900 and 1901.\*

Mineral or Metal.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
Antimony, crude } (metal)...	Metric Tons. 81	£ 1,339	Metric Tons. 119	£ 1,737
„ refined }	349	11,141	430	12,071
Arsenic (metal) ... ..	5	60	10	167
Coal ... ..	7,429,457	2,517,918	8,945,938	3,133,485
Copper (metal) ... ..	25,304	1,667,724	27,440	1,664,656
Gold (Fine) ... ..	Kilos. 2,130	290,079	Kilos. 2,480	338,081
Graphite ... ..	94	2,443	88	1,786
Iron, pig ... ..	21,299	70,480	55,171	209,097
„ pyrites ... ..	16,146	2,649	17,619	2,846
„ vitriol ... ..	932	1,831	223	357
Lead (metal) ... ..	1,877	33,342	1,807	25,238
Manganese ... ..	15,228	16,698	16,298	11,109
Mercury ... ..	Kilos. 270	69	Kilos. 751	173
Ochre ... ..	33	230	82	608
Petroleum, refined ...	Litres 138,375,939†	198,859	Litres 14,585,636	49,476
„ crude ...			„ 130,165,655	171,204
Salt ... ..	659,118	961,637	690,896	891,849
Silver (metal) ... ..	Kilos. 58,953	239,822	Kilos. 54,839	216,815
Sulphur ... ..	14,435	32,042	16,578	39,549
Tin (metal) ... ..	12	1,210	14	1,408
Total value ... ..	—	6,049,073	—	6,771,712

\* Abstract of the Statistics of the Imperial Japanese Department of State for Agriculture and Commerce, 1900; No. 1, Tokyo and Osaka, 1902; and Official Return furnished by the Mining Bureau at Tokyo.  
† Crude.



JAPAN.]  
JOHORE.]  
LIBERIA.]  
LUXEMBURG.]  
MADAGASCAR.]

JAPAN—continued.

TABLE 477.

ACCIDENTS at MINES during the Years 1900 and 1901.\*

	Year.	Killed.	Death-rate per 1,000 Persons Employed.†
	1900	171	1·31
	1901	219	1·40

Java. (See DUTCH EAST INDIES.)

Johore.‡

Gold has been found in one or two places, and the country is rich in iron ore. Important deposits of tin have been discovered in several places, and a considerable amount of tin mining is now carried on in the Ulu Johore districts, and some at Bukit Mor, Padang.

Liberia.§

It is supposed that Liberia contains much mineral wealth, and some prospecting for gold is going on.

Lourenço Marques. (See PORTUGUESE EAST AFRICA.)

Luxemburg.

The only important mineral production of the Grand Duchy of Luxemburg is iron ore. On account of the commercial connection of Luxemburg with Germany, the returns of the mines are given in the German Mineral Statistics, and will be found under "German Empire."

Madagascar.||

The mineral wealth of the island appears to be great. In addition to gold, which is found in alluvial deposits widely spread over the island, the ores of antimony, copper, iron and tin are said to be abundant, to say nothing of asphalt, coal, and petroleum.

\* Abstract of the Statistics of the Imperial Japanese Department of State for Agriculture and Commerce, 1900 : No. 1, Tokyo and Osaka, 1902 ; and Official Return furnished by the Mining Bureau at Tokyo.

† Excluding Workers in Placer Mining.

‡ The Singapore and Straits Directory for 1900. Singapore, 1900, p. 301.

§ Cromie, "Trade of Liberia for the year 1901." *Dipl. and Cons. Reports*, No. 2,875, Ann. Ser., 1902 [Cd. 786-179], p. 8.

|| MS. communication to Foreign Office, 5 July, 1900, Consul Porter, "Trade of Madagascar for the Year 1899." *Dipl. and Cons. Reports*, No. 2513, Ann. Ser., 1900 [Cd. 352-9], p. 5, and Consul Sauzier, "Trade of Madagascar for the year 1902." *Dipl. and Cons. Reports*, No. 3,087, Ann. Ser., 1903, [Cd. 1,766-21], p. 16.

MADAGASCAR—*continued.*

According to Consul Porter, rich deposits of alluvial gold have been discovered in the valley of the Ampoasary, a tributary of the Mananjary river, about 40 miles east of the town of Ambositra. The auriferous gravel is being washed in pans by the natives, of whom about 3,000 are at work. The district is unhealthy owing to the prevalence of fever.

Gold mining in the island is now regulated by the Decree of the 20th February, 1902, which affords many facilities for working which were not permissible under the old law of July, 1896.

The output of gold has increased very considerably since 1896, when it was only 44 kilos. The quantity produced and exported in 1902 was 1,535 kilos (49,351 ozs.), valued at £164,944.\*

## Mexico.†

Many minerals are obtained in Mexico. The most important are the ores of copper, gold, lead, and silver.

*Coal.*—Various coalfields have been discovered, and no doubt will gradually become of great value to the Republic. At present the output is small. Native coal is used on some of the railways.

*Copper.*—The most important copper mine in Mexico is at Boleo,‡ Lower California. It employed 3,700 persons in 1900, and produced 11,297 tons of metal.

*Gems.*—Opals§ are mined extensively in the State of Queretaro.

*Gold.*—The precious metal is found in many of the provinces, but especially in Chihuahua Sonora, Sinaloa, Guerrero, Sonora, Oaxaca, and Lower California.

*Iron.*—Rich deposits exist,|| but at present smelting operations are conducted on a small scale.

*Marble.*—The so-called "Mexican onyx" is a handsome marble, obtainable in large blocks, and much prized for decorative purposes.

*Silver.*—Mexico produces nearly 30 per cent. of the world's output of silver. The principal mining districts are in the States of Guanajuato, Zacatecas, San Luis Potosi, and Hidalgo.

TABLE 478.

PERSONS EMPLOYED at MINES during the Years 1899¶ and 1901.\*\*

Year.	Men.	Women.	Boys.	Total.
1899    ...    ...    ...	99,396	1,288	5,852	106,536
1901    ...    ...    ...	92,187	414	5,595	98,196

\* Return furnished by the French Government.

† Romero, *Geographical and Statistical Notes on Mexico*. New York and London, 1898, pp. 13-27, and Sellerier, *Data referring to Mexican Mining*. Mexico, 1901.‡ *Exposition Universelle de 1900. Compagnie du Boleo. Notice sur la période de 1889 à 1900*. Paris, 1900.§ Kunz, "Gems and precious stones of Mexico." *Trans. American Inst. Min. Eng.*, 1901.|| Witherbee, "The Iron Mountain, Durango, Mexico." *Trans. American Inst. Min. Eng.*, 1901.

¶ Official Return furnished by the Ministry of Finance, Mexico.

\*\* The Financial Agency of the Mexican Government in London.

MEXICO—continued.

TABLE 479.

VALUE of MINERALS exported during the Years 1900-1 and 1901-2.\*

Mineral.	1900-1.		1901-2.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	\$	Metric Tons.	\$
Antimony ore ... ..	3,152	31,584	3,740	37,401
Asphalt ... ..	634	13,416	134	5,219
Coal ... ..	31,921	130,784	2,819	14,823
Copper and Copper ore ... ..	33,351	11,177,755	61,874	16,849,835
Gold ... ..	Kilos. 13,259	8,955,536	Kilos. 13,792	9,315,257
Graphite... ..	1,473	14,770	580	6,351
Gypsum ... ..	1,300	6,004	—	—
Lead ... ..	84,959	5,066,645	98,422	5,735,840
Marble ... ..	849	78,760	1,030	98,551
Precious stones... ..	—	. 417	—	1,430
Salt ... ..	1,387	3,539	246	4,537
Silver ... ..	—	72,420,784	—	59,632,472
Tin ... ..	Kilos. 96	43	Kilos. 76	103
Zinc ore ... ..	615	5,257	116	16,639
Minerals not specified... ..	698	5,494	529	36,240
Total value in \$ ... ..	—	97,910,788	—	91,754,698
” ” £ ... ..	—	£10,686,632†	—	10,106,995†

The output of Fine Gold for the year 1902 was reported to be 337,349 ozs. (*kilos.* 10,462), and of Silver, 46,743,933 ozs. (*kilos.* 1,453,900)‡.

TABLE 480.

DEATHS from ACCIDENTS at MINES during the Years 1899§ and 1901.\*

	Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
	1899 ... ..	109	1·02
	1901 ... ..	330	3·37

\* The Financial Agency of the Mexican Government in London.  
† Calculated at 10 dollars = £1, except for the value of the Gold which is calculated at 5 dollars to £1.  
‡ Biorklund, "Trade of Mexico for the year 1902." *Dipl. and Cons. Reports*, No. 3,112, Ann. Ser., 1904 [Cd. 1766-46], pp. 23 and 25.  
§ Official Return furnished by the Ministry of Finance Mexico.



According to statements in the press (1901), some dynamite stored in San Andres silver mine, Durango, exploded accidentally and caused the death of 87 persons.

### Morocco.\*

*Copper.*—In the beginning of the sixties copper ore was still being worked near Tarudant, the capital of the province of Sus. The ore is likewise found in the Tangier region.

*Gold.*—Silver and gold are said to occur in the province of Sus.

*Iron.*—It is probable that the Carthaginians worked the old iron mines, of which remains exist at Djebel Hadid, 14 miles N.E. of Mogador.

*Salt.*—Morocco is rich in salt. Some is found in the beds of dried-up lakes in summer. Rock salt is obtained in the Atlas Mountains, near Demnat; and at Rabat and elsewhere sea water is evaporated by the heat of the sun.

### Netherlands and its Colonies. (See HOLLAND, DUTCH EAST INDIES, AND DUTCH WEST INDIES.)

### New Caledonia.†

*Chromic Iron.*—New Caledonia produces more chromic iron than any other country except Turkey. The ore exported is good, and gives 50 to 52 per cent. of chromium oxide.

*Cobalt Ore.*—With an output of 7,512 tons of ore in 1902, containing 3 to 4 per cent. of metal, New Caledonia has doubled its production of 1901.

*Copper Ore.*—There is a decided improvement in the output of copper ore in 1902 compared with that of the previous year.

*Nickel Ore.*—The French colony, while suffering from the competition with Canada, the greatest nickel country of the world, remains nevertheless a large producer. The ore exported yields from 6 to 8 per cent. of metal.

TABLE 481.

### PERSONS EMPLOYED at MINES during the Year 1898.‡

Year.	White.	Coloured.	Total.
1898    ...    ...	3,831	1,259	5,090

\* Fischer, "Die Bodenschätze Maroccos" *Zeitschr. f. prakt. Geologie*. Vol. VIII., 1900, Part 4, p. 110.

† Information furnished by the French Government.

‡ *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année, 1898*, p. 85. Later figures are not obtainable.

NEW CALEDONIA—*continued.*

TABLE 482.

QUANTITY and VALUE of MINERALS produced and exported during the Years 1901 and 1902.\*

Mineral.	1901.		1902.	
	Quantity Produced.	Value.	Quantity Exported.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chrome ore ... ..	17,451	946,000	10,281	463,000
Cobalt ore ... ..	3,123	415,000	7,512	2,446,600
Copper ore ... ..	1,088	99,000	3,720	365,000
Nickel ore ... ..	132,814	7,435,000	129,653	6,720,000
Total value in francs ... ..	—	{ 8,895,000	—	{ 9,994,600
“ “ “ £ sterling		{ £355,800		{ £399,784

Nicaragua.†

The exact output of the mines and alluvial diggings does not appear to be known. The exports of gold and gold ore are given in the table below.

TABLE 483.

QUANTITY and VALUE of GOLD exported during the Year 1900, and the value during the year 1902.

Mineral.	1900.		1902.
Gold (bars and dust) ...	{ Kilos. 575 } { Ozs. 18,500 }	£ 62,000	} £ 96,870
Gold ore ... ..	Lbs. 14,050	80,690	

Norway.‡

Norway is far less important as a mining country than Sweden.

*Apatite.*—This mineral was worked on a large scale some years ago at Oedegaarden, but the output is now comparatively small.

*Copper.*—Copper ore and iron pyrites are the chief metallic products of Norway. They are produced by various mines, among those of which may be mentioned Røros, Sulitelma and Lyngen.

*Felspar.*—The supply of felspar is derived mainly from veins of pegmatite in Sørstødal in the province of Smaalenene and along the coast between Bamle and Arendal. Quartz and mica are obtained from the same deposits.

*Gems.*—Emeralds are being obtained near Minne.

*Granite.*—Quarries producing granite, syenite, gabbro or porphyry, are worked near Fredrikshald, Frederikstad, Larvik and Drammen.

\* *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1901, and pour l'année 1902.*  
† Consul Chambers, "Trade of Nicaragua for the Year 1902." *Dipl. and Cons. Reports*, No. 2,963, Ann. Ser., 1903 [Cd. 1386-40].  
‡ Information furnished by the Central Statistical Office, Kristiania, and *La Norvège. Ouvrage Officiel publié à l'occasion de l'Exposition Universelle de Paris, 1900.* Kristiania, 1900, p. 395.



## NORWAY—continued.

*Infusorial Earth.*—Beds of infusorial earth are worked at different places in the South of Norway.

*Marble.*—Fauske, in Nordland, is the chief marble centre. The quarries are worked on a large scale.

*Silver.*—The Kongsberg mines have long been famous for their native silver, which is sometimes met with in masses of considerable size; the picked stuff sent to the smelting works contains 70 per cent. of the precious metal. The amount of silver obtained by smelting, and derived entirely from Kongsberg, was 5,684 kilos., valued at 400,000 kroner in 1901.

*Soapstone.*—This mineral forms one of the exports of Norway.

There appears to be no official information about accidents in mines in Norway, similar to that which is given by the sister country.

TABLE 484.

PERSONS EMPLOYED at MINES during the Years 1900 and 1901.\*

Kind of Mines.	1900.	1901.
Apatite ... ..	?	?
Chrome ore ... ..	10	3
Copper ore ... ..	1,924	1,684
Felspar ... ..	?	?
Gold ... ..	71	27
Iron ore ... ..	162	324
Iron pyrites (in part cupreous) ...	494	532
Molybdenite ... ..	—	19
Nickel ore ... ..	39	7
Rutile ... ..	—	10
Silver and silver ore ... ..	280	205
Zinc ore ... ..	37	12
Total ... ..	3,017	2,823

TABLE 485.

QUANTITY and VALUE of MINERALS produced from MINES during the Years 1900 and 1901.\*

Mineral.	1900.		1901.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Kr.	Metric Tons.	Kr.
Apatite (exported) ... ..	300	16,000	738	41,000
Chrome ore ... ..	165	3,000	85	2,000
Copper ore ... ..	46,858	2,535,000	40,726	2,139,000
Felspar (exported) ... ..	17,609	115,000	18,323	275,000
Gold (fine) ... ..	Kilos. 4 <sup>300</sup>	9,000	Kilos. 5	10,000
Iron ore ... ..	17,925	133,000	42,252	254,000
Iron pyrites (in part cupreous) ...	98,945	2,354,000	101,894	2,437,000
Molybdenite ... ..	—	—	4	7,000
Nickel ore ... ..	1,888	47,000	2,018	40,000
Silver (fine) ... ..	Kilos. 4,578	336,000	Kilos. 5,684	400,000
Titanium ore (rutile) ... ..	40	24,000	55	25,000
Zinc ore ... ..	204	6,000	90	2,000
Total value in Kr.... ..	—	5,578,000	—	5,632,000
“ “ £ sterling...	—	£306,483	—	£310,132

\* Official Return furnished by the Central Statistical Office, Kristiania.



## Paraguay.

Though many useful ores and minerals are said to exist in Paraguay, they still remain unworked.

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## Persia.\*

The minerals of the country belong to the Government, and the mines are leased out to private persons. The Ministry of Mines has no account of the number of persons employed, nor of quantity and value of the minerals produced.

The mineral wealth of Persia is great, though it cannot be properly utilized at the present time owing to want of easy means of communication. Deposits of the following useful minerals are known to exist, viz. :—alum, antimony ore, borax, coal, the ores of cobalt, copper, gold, iron, lead and manganese, petroleum, realgar, salt, saltpetre, silver-lead ore, sulphur, and turquoises.

*Coal.*—There are fine coal deposits† near Kerman, and much iron ore of good quality on the slopes of the Elburz range and elsewhere.

*Copper.*—Rich deposits of copper are known. During the year 1902, 11 tons were exported from the Ports of Bushire and Lingah, and copper valued at £160 from the Bahrain Islands.‡

*Lead ore.*—Argentiferous lead ore is plentiful, but is worked in a primitive fashion.

*Salt.*—The following quantities were exported in 1902 :—4,000 tons from Lingah, and 180 tons from Bunder Abbas.‡

*Turquoises.*—The annual rent paid for the turquoise mines§ near Nishapur in Khorassan is £4,800, and the value of the gems produced must therefore considerably exceed that sum.

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## Peru.||

No exact data exist concerning the number of persons employed in mines ; but it is estimated at 100,000, including a few females.

The number of persons employed on the coast at the salt works, quarries, and petroleum wells is estimated at 5,000.

The principal minerals of Peru are borate of lime, coal, copper ore, gold, petroleum, salt, and silver ore.

*Borates.*—Though borates occur in various places, the only deposit which is being worked at a profit at the present time, is that of Salinas, near the boundary between the provinces of Arequipa and Moquegua.

*Coal.*—All the different varieties of mineral fuel exist in Peru, viz. :—peat, lignite, coal, and anthracite. Lignite is found in the Tertiary rocks on the coast and elsewhere. The true coal and anthracite are found in the Cretaceous and Jurassic rocks in various places, and a solid hydro-carbon, which is neither coal nor anthracite, occurs in veins, and is likewise worked and sold as mineral fuel.

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\* Helmhacker, "The Mineral Resources of Persia," *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 38, and *B. u. h. Zeitung*, Vol. LVIII., 1899, p. 272.

† *Berg-und hüt. Zeit.*, Vol. LVIII., 1899, p. 272.

‡ Acting Consul General Kemball, "Trade of the Persian Gulf for the year 1902," *Dipl. and Cons. Reports*, No. 3036, Ann. Ser., 1903 [Cd. 1386-113].

§ Consul General Temple, "Report on the Trade and Commerce of Khorassan for the Year 1897-98" *Dipl. and Cons. Reports*, No. 2202, Ann. Ser., 1899 [C. 9044-28].

|| Garland, *Apuntes sobre la industria mineria 1900*. Lima, 1901, and *Mines and Mining in Peru*. Lima, 1903.

## PERU—continued.

*Copper ore.*—Rich veins of copper ore exist in the Cerro de Pasco silver mines and in many other districts.

*Gold.*—The provinces which are richest in gold are Sandia, Carabaya, Paucartambo and Pataz.

*Petroleum.*—The only places where petroleum is being obtained at the present time are on the coast of the department of Piura.

*Silver ore.*—This is the principal mineral worked in Peru; the most important mines are at Cerro de Pasco, Hualgayoc, Salpo, Huaylas, Recuay, Cajatambo, Yauli, Huallanca, Huarochiri, Castrovirreyna, Caylloma, Lampa and Puno. The output of silver has diminished considerably, on account of the drop in price of the metal.

*Salt.*—The production of salt is a Government monopoly. It is found in abundance in Peru, and occurs in various ways. There are deposits on the coast at Sechura, Huacho, Otuma, Moquegua, &c. In the Andes the salt beds of San Blas are worked on a large scale, and in eastern Peru there is the famous Cerro de la Sal.

*Sulphur.*—Sulphur is found on all the volcanoes of the Andes in considerable quantities, besides occurring in sedimentary deposits in the department of Piura.

TABLE 486.

MINERALS produced during the YEARS 1901 and 1902.

Mineral.	1901.		1902.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Borates ... ..	4,156	33,248		
Coal ... ..	45,000	60,000		
Copper ore ... ..	25,173	1,025,250		
Copper (Fine) ... ..	—	—	7,700	(Not stated).
Gold (Fine) ... ..	Kilos. 1,830	250,000		
Lead (Ore and Metal) ... ..	114	5,012		
Petroleum ... ..	Galls. 9,567,735	68,064		
Salt ... ..	15,849	78,476		
Silver (Fine)... ..	Kilos. 200,081*	700,000		
Sulphur ... ..	4	41		
Total value ... ..	—	2,220,091	—	—

\* Estimated.

† Incomplete.

### Philippine Islands.\*

It has long been known that the mineral resources of these islands are very varied.

*Coal.*—Coal and lignite are found on many of the islands, and mining operations are likely to be carried on in the islands of Negros, Cebú, and Bataan.

*Copper.*—Copper ore occurs in the islands of Benguet, Lepanto, and Panay.

*Gold.*—Large quantities of gold have been extracted from alluvial deposits and quartz veins.

*Iron.*—Cebú and Caraballo have deposits of iron ore, which are likely to be worked.

*Lead.*—The ore of this metal is found in Marinduque, Luzon, and Panay.

*Petroleum and Natural Gas.*—Mineral oil is known in Cebú, Panay, and Leyte, and Cebú has likewise natural gas.

*Quicksilver.*—According to the reports of prospectors, there are deposits of quicksilver on Leyte and Panay.

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### Porto Rico.†

The island of Porto Rico possesses mineral resources which are not likely to remain undeveloped by its new owners. At present no *bona fide* mining is being carried on.

*Coal.*—Coal has been found in the western part of the island and at Guatemala.

*Copper.*—The ores of copper are found in several places.

*Gold.*—From six to eight thousand dollars worth of gold a year is panned out from the beds of creeks and rivers.

*Gypsum.*—This mineral is common.

*Iron Ore.*—There are valuable deposits of iron ore, especially north of Juncos.

*Lignite and Peat.*—These two minerals occur in many places.

*Phosphate of Lime.*—Phosphate rock is everywhere abundant. It has been worked on the islet of Mona, in the San Domingo Channel, and about 9,000 tons were exported to Europe in 1894.

*Salt.*—Rich deposits of salt are known in several places.

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### Portugal.‡

The mineral products of Portugal, as shown by Table 489, are numerous, but the quantities raised at the present time are not sufficient to entitle it to be called a great mining country. The official statistics omit all mention of the marble, slate, and other stone quarried in the country.

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\* Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242. Rice "Mining in the Philippines," *Eng. Min. Jour.*, Vol. LXX., 1900, p. 400.

† Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.—"Zur Geologie der Insel Mona in West Indien," *Berg- und hüttenmännische Zeitung*, Vol. LVIII., 1899, p. 337.—Domerech "Porto Rico; her Mineral Resources," *Mines and Minerals*, Vol. XIX., 1899, p. 529, and Consul Churchward, "Trade of Porto Rico for the year 1902," *Dipl. and Cons. Reports*, No. 3027, Ann. Ser., 1903 [Cd. 1,386-104], p. 12.

‡ Official Return furnished by the Portuguese Government.



## PORTUGAL—continued.

*Antimony Ore.*—The principal antimony mines are in the commune of Gondomar, in the Porto district; the ore likewise occurs in the Braganza district.

*Copper.*—The deposit of copper-bearing pyrites at San Domingos, in Southern Portugal, furnishes most of the mineral wealth of the country at the present time. There are sundry other mines producing cupreous iron pyrites.

*Iron Ore.\**—Rich deposits of iron ore exist, which it is expected will some day become a source of considerable wealth.

*Marble.*—Though the country cannot boast of treasures of white statuary marble like that of Carrara, it possesses many beautiful varieties of the stone.

*Slate.*—There are slate quarries at Valongo which are worked by an English company. They produce large slabs for billiard tables, tanks, and cisterns. The quantity exported in 1902 from Oporto was 16,000 tons.†

*Tin Ore and Wolfram.*—These minerals occur in the Villa Real and Braganza districts.

TABLE 487.

PERSONS EMPLOYED at MINES during the Years 1901 and 1902.

Kind of Mines	Under-ground.			Above-ground.			Total Under and Above Ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
Coal ... ..	149	—	149	172	47	219	368
Iron ore ... ..	82	—	82	221	18	239	321
Other mines ...	1,612	—	1,612	1,666	190	1,856	3,468
Total for 1902	1,843	—	1,843	2,059	255	2,314	4,157
Total for previous year ... ..	2,251	—	2,251	2,213	329	2,542	4,793

TABLE 488.

PERSONS EMPLOYED at QUARRIES during the Year 1890.‡

Under-ground.			Above-ground.			Total Under and Above Ground.
Males.	Females.	Total.	Males.	Females.	Total.	
419	—	419	4,240	57	4,297	4,716

\* Consul Cowper, "Trade of Southern Portugal for the year 1900." *Dipl. and Cons. Reports*, No. 2635, Ann. Ser. 1901 [Cd. 429-93], pp. 4 and 5.

† Acting Consul Grant, "Trade of Northern Portugal for the year 1902." *Dipl. and Cons. Reports*, No. 3064, Ann. Ser. 1903 [Cd. 1,386-141], p. 11.

‡ No later return available.

PORTUGAL—continued.

TABLE 489.

QUANTITY of MINERALS produced during the Years 1901 and 1902.

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Mil reis.	Metric Tons.	Mil. reis.
Arsenic ... ..	527	32,664	736	30,614
Coal (Anthracite) ... ..	16,000	51,742	11,000	25,465
Copper precipitate ... ..	2,061	314,877	2,205	263,147
Cupreous pyrites ... ..	215	3,868	655	8,341
Cupreous iron pyrites ... ..	443,182	807,515	413,714	720,087
Gold (fine) ... ..	Kilos 2	1,730	Kilos 2	1,760
Gold and Antimony concentrates ... ..	79	3,234	68	2,346
Iron ore ... ..	21,599	35,602	19,914	16,172
Iron pyrites ... ..	*	—	*	—
Lead ore ... ..	445	9,065	1,651	26,424
Lignite ... ..	—	—	5,792	16,883
Manganese ore ... ..	904	5,424	—	—
Tin ore ... ..	31	12,376	24	6,998
Tin (Metal) ... ..	1	678	—	—
Wolfram... ..	90	12,032	234	33,045
Zinc ... ..	—	—	2,025	19,516
Total value in milreis ... ..	—	1,290,807	—	1,170,798
"    "    £ sterling ... ..	—	£286,846	—	£260,177

TABLE 490.

DEATHS from ACCIDENTS at MINES during the Years 1901 and 1902.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
Coal ... ..	—	—	—	—	—	—	—	—
Iron ore ... ..	—	—	—	—	—	—	—	—
Other mines ... ..	4	—	4	—	—	—	4	1.15
Total for 1902 ... ..	4	—	4	—	—	—	4	0.96
Total for pre- ceding year }	9	—	9	—	—	—	9	1.88

There were seven deaths from accidents in quarries during the year 1890, giving a death-rate of 1.48 per 1,000 persons employed in that year.

\* Given under Cupreous Iron Pyrites.

ROUMANIA—continued.

productive wells. The deepest bore-hole is only 550 metres deep, whilst the wells are often only 20 to 100 metres deep. According to M. Alimanestiano, who is Chief of the Mining Department, the most pressing need of the petroleum industry is the establishment of a pipe-line from the wells to the Danube, or even to Costantza. Given cheap transport, Roumania could supply central Europe with oil at lower prices than any of its competitors.

*Salt.*—The country is blessed with rich deposits of salt, which extend for a distance of about 100 miles along the Carpathians. One bed of pure rock salt is from 800 to 1,000 feet thick.\* The industry is a Government monopoly, and much of the work in the rock salt mines is carried on by convict labour. About 22,000 tons of rock salt are exported annually to Turkey and 3,000 to Russia. M. Alimanestiano is of opinion that the export trade might be extended with profit to Africa and even India.

*Stone.*—Roumania has hitherto been largely dependent upon the foreigner for stone and building materials generally, though ample supplies exist in the country itself, especially in the Dobrudja. However, the paving stones from Belgium and France have now been to some extent ousted by native products, in spite of the difficulties which beset the Roumanian quarry-owner in the shape of expensive transport and want of trained workmen. As these obstacles disappear, quarrying may be expected to become an important industry in the country.

There are already five important granite quarries in the Dobrudja, and the total number of quarries in the country is shown by the official statistics† to be very considerable. There are a few marble quarries.

For centuries the alluvia of many of the rivers have been known to carry gold, and a little of the precious metal is occasionally washed from the sands by the peasantry; but the gold resources of Roumania are as yet unknown. The same may be said of the ores of cobalt, copper, lead, manganese, mercury, iron, and silver, and of the beds of anthracite and coal, which have been found cropping out in various parts of the country.

TABLE 491.  
OUTPUT OF MINERALS during the Years 1901 and 1902.‡

Mineral.	1901.		1902.	
	Metric Tons.	Value.	Metric Tons.	Value.
		Lei.		
Lignite ... ..	105,000	788,000		
Petroleum ... ..	320,000	10,500,000		
Salt .. ...	90,000	(Monopoly.)		
Stone ... ..	980,000	830,000		
Total value in Lei ... ..	—	12,118,000§		
“ “ £ Sterling ... ..	—	£484,720		

\* Crémer, *Exposition Universelle de 1900, Paris. Notice sur l'Exploitation du Gisement de sel gemme de la Roumanie présentée au Jury de la Classe 63.*  
† *Statistica Carierelor din țara*, 1897; Bucharest, 1898.  
‡ Official Return furnished by the Département de l'Agriculture, du Commerce, de l'Industrie et des Domaines," Bucharest. Figures for 1902 not yet received.  
§ Excluding value of salt.



## Russia.

Whether judged by the number of persons employed, or by the value of the products obtained, the workings in Russia for coal, gold, iron ore, manganese ore, petroleum, platinum, and salt, are worthy of much attention.

*Asbestos.*—In the year 1902 the quantity of asbestos exported from Reval was 1,840 metric tons.\*

*Coal.*—The quantity of coal raised in Russia has risen very considerably of late, for the total output in 1882 was 3½ million tons, and over 16 million tons in 1901. The most productive coal region of Russia is the Donetz Basin,† in the province of Ekaterinoslav. The output of this basin in 1902 was 1,075,161 tons of anthracite and 9,281,935 tons of bituminous coal. Next in importance comes Poland, with true coal and brown coal. The Dombrowa Basin,‡ in Poland, is a continuation of the great Silesian Coal Basin; it is now yielding about 4 million tons a year, half the output of the Donetz Basin. These two basins together produce about two-thirds of the coal of Russia. Other coal regions§ worth mentioning are the Urals, the Eskibastus district south of Omsk, the Kusnetski Basin, in the Government of Tomsk, and the Tkhibulski district, in the Caucasus.

Coal is abundant in Siberia, both east and west, and even along the line of the Trans-Siberian Railway; but the quality is poor. A long list of localities is given by Mr. Cooke in his report upon the Trans-Siberian Railway.|| The Eskibastus coalfield alone, in the neighbourhood of Pavlodar, on the Irtish, is estimated to have reserves of more than 3,000 millions of tons.

The coal of Saghalien is being worked on a large scale, and is used for steamships.

Valuable coal deposits have lately been found in Southern Usuri,¶ and when communication has been established with Nakhodka bay by rail it is expected that the collieries will be able to supply the wants of the Russian fleet in the Pacific.

*Copper.*—Most of the copper of Russia comes from the Urals and the Caucasus. The yield for 1902 from the Caucasus was 107,118 tons of ore and 3,440 tons of metal.\*\*

*Gold.*—In 1898 the output†† of gold of Russia was 2,346 poods, or 1,235,764 ozs. The gold is derived mainly from alluvial deposits in the Urals, and in Eastern and Western Siberia; the localities where it is being worked are shown upon a useful map prepared by M. de Batz.‡‡ According to Rickmer,§§ a large number of persons are employed in Eastern Bokhara in washing auriferous gravel. The value of the gold obtained is estimated at £20,000 to £30,000 annually. The production of gold from the Urals in 1900 was 291,235 ozs.||||

*Iron.*—The present state of the iron industry in Russia is shown by an excellent map drawn by Mr. Archibald P. Head.¶¶ More than one-half of the pig-iron of the Empire is made in the Donetz Basin,† most of the ore being obtained from the rich deposits in the Krivoy Rog district.

*Manganese ore.*\*\*\*—The great manganese district of Russia is in the province of Kутаїs and county of Sharapan, and it extends over the whole central part of the basin

\* Vice-Consul Soucanton, "Trade of Reval for the year 1902." *Dipl. and Cons. Reports*, No. 3,102, Ann. Ser., 1903 [Cd. 1766-36], p. 13.

† Vice-Consul Martin, "Trade of Rostov-on-Don and District for the year 1902." *Dipl. and Cons. Reports*, No. 3,115, Ann. Ser., 1904 [Cd. 1766-49], p. 14.

‡ Consul-General Murray and Vice-Consul Kiemens, "Trade of Poland Lithuania for the year 1899." *Dipl. and Cons. Reports*, No. 2425, Ann. Ser., 1900 [Cd. 1-62], p. 37.

§ Cooke, "Coal Crisis in Russia," *Dipl. and Cons. Reports*, No. 523, Misc. Ser., 1900 [Cd. 2-6], p. 6.

|| *Dipl. and Cons. Reports*, No. 533, Misc. Ser., 1900 [Cd. 2-16], p. 17.

¶ *Journal de St. Pétersbourg*, 13 (26) Oct. 1903.

¶¶ Consul Stevens, "Trade of Consular District of Batoum for the year 1902," *Dipl. and Cons. Reports*, No. 2979, Ann. Ser., 1903 [Cd. 1386-56], p. 8.

†† Cooke, "Trans-Siberian Railway." *Dipl. and Cons. Reports*, No. 533, Misc. Ser., 1900 [Cd. 2-16], p. 18.

‡‡ "The auriferous deposits of Siberia," *Trans. Am. Inst. M.E.*, Vol. XXVIII., 1898.

§§ "Travels in Bokhara," *Geogr. Jour.*, London, Vol. XIV., 1899, p. 606.

¶ Cooke, "Mineral and Metallurgical Industries of Russia." *Dipl. and Cons. Reports*, No. 555, Misc. Ser., 1901 [Cd. 430-10]

¶¶ "The South Russian Iron Industry," *Jour. Soc. Arts*, Vol. LI., 1902, p. 75.

\*\*\* *Caucasian Manganese*. Kутаїs, 1900. London, 1901.



## RUSSIA—continued

of the River Kvirila. The beds of manganese ore are interstratified with sand and clay of Eocene age. The richest deposits cover an area of more than 50 square miles, and the mining district is estimated to contain at least a hundred million tons of workable ore. The ore, as exported, contains about 50 per cent. of metallic manganese, 6 to 9 per cent. of silica, and only 0.12 to 0.17 per cent. of phosphorus. The district produced 402,311 tons of Manganese ore in 1902\*

*Peat.*—Though peat may appear an unimportant fuel compared with coal, it nevertheless is so abundant and is so easily obtained in certain localities far removed from railways that it deserves special attention. In Russia there is an office under the Ministry of Agriculture and Domains (*Bureau de l'Industrie des Tourbes*) which supervises the peat industry. Many of the turbaries have been carefully tested by borings, and an official map exhibited at the Paris Exhibition gave information about 113 turbaries, occupying an area of 398 sq. miles (103,000 hectares); several are from 19 to 38 sq. miles (5,000 to 10,000 hectares) in area and over.

*Petroleum.\**—The production of the oil wells near Baku continues to increase, the total output being 73,130,864 barrels (42 gallons) of crude oil in 1902 against 67,454,372 barrels in the previous year. The Sabounchi field was the most productive of the five oil-fields near Baku. In the five districts there were in 1902 altogether 3,317 wells, of which 1,202 were idle; 1,402 were producing, whilst the remainder were either being bored, deepened, cleared out, or prepared. The average depth of the producing wells in 1901 was 440 feet on the Balakhany field, 980 on the Sabounchi, 1,470 on the Romany, 1,239 on the Bibi-Eibat, and 462 on the Binagadi. Of the total 73 million barrels obtained in the Baku fields, only 9½ million were derived from wells in which the oil rose to the surface; the remainder had to be drawn up mechanically.

Russia's wealth in petroleum is not confined to the Baku district, wells at Grozny are yielding large quantities of oil, and great hopes are based upon the new oil field near the river Uchta† on the boundary of the provinces of Archangel and Wologda.

*Platinum.*—All the platinum is obtained from alluvial deposits in the Urals; the output in 1900 was 174,846 ozs.‡ Russia produces 96 per cent. of the world's supply of this metal.

*Quicksilver.*—All the quicksilver is obtained in the district of Ekaterinoslav, in South Russia; the deposits were first worked in 1885.

*Salt.*—Much more than half the salt is a harvest from lakes, especially in the Crimea and the adjacent provinces, and in Astrakhan. Salt is likewise obtained by evaporating brine pumped up from boreholes, and by mining beds of rock-salt.

In Western Siberia salt is obtained from a number of lakes which partially dry up in summer and in hot years deposit crusts of salt from two to four inches thick. The great Burlinsk Lake yields 20,000 tons yearly in this fashion.§

In Eastern Siberia the salt is obtained from springs, and from deposits of rock salt.§

*Sulphate of sodium.*—The great Marmischanski Lake, in the Government of Tomsk, is estimated to contain more than a million tons of sulphate of sodium; about 1,600 tons are obtained from it annually, and some of it is used for making soda.§

*Sulphur.||*—Native sulphur occurs in various parts of the Empire; it is worked in Daghestan and at Czarkowsky, in the Government of Kielce, near the Austrian frontier.

*Zinc ore.*—The zinc ore is obtained from deposits of calamine in Poland.

\* Consul Stevens, "Trade of Consular District of Batoum for the year 1902." *Dipl. and Cons. Reports*, No. 2979, Ann. Ser. 1903 [Cd. 1386-56].

† B. von Vangel, "Petroleum in the Uchta District." *Boring & Drilling*, Vol. II., 1901, p. 89.

‡ Cooke, "Mineral and Metallurgical Industries of Russia," *Dipl. and Cons. Reports*, No. 555, Misc. Ser., 1901 [Cd. 430-01].

§ Thiess, "Die Salzgewinnung in Siberien." *Zeitschr. B. H. Salinenwesen*, Vol. XLVI., 1898, p. 249.

|| Consul-General Murray, "Trade of Warsaw and District for the year 1897." *Dipl. and Cons. Reports*, No. 2135, Ann. Ser., 1898 [C. 8648-157].



## RUSSIA—continued.

TABLE 492.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1899 and 1900.\*

Kind of Mineral working.	Persons Employed during the Year.	
	1899.	1900.
Asbestos ... ..	1,159	1,330
Asphalt ... ..	588	509
China clay ... ..	434	191
Coal ... ..	85,651	109,208
Cobalt, chrome, iron, &c. ... ..	1,578	2,289
Copper ore ... ..	4,894	5,061
Fire clay ... ..	6,600	6,789
Gold ... ..	83,742	90,988
Iron ore ... ..	48,359	57,742
Manganese ... ..	4,417	6,090
Naphtha ... ..	24,811	27,566
Phosphorite ... ..	2,057	462
Platinum ... ..	9,197	1,763
Quicksilver ... ..	980	670
Salt ... ..	22,003	21,634
Sulphur ... ..	226	206
Silver-lead ore ... ..	1,222	1,473
Stone Quarries ... ..	42,604	41,239
Zinc ore ... ..	1,180	1,331
Total ... ..	341,702	376,541

TABLE 493.

PERSONS EMPLOYED at GOLD MINES during the Years 1899 and 1900.\*

Year.	Number of Persons Employed.				
	Urals.	West Siberia.	East Siberia.	Finland.	Total.
1899 ... ..	39,315	12,261	32,094	72	83,742
1900 ... ..	45,277	12,059	33,612	40	90,988

TABLE 494.

QUANTITY of MINERALS produced during the Years 1900 and 1901.†

Mineral.	District whence Obtained.	1900.	1901.
		Quantity.	Quantity.
		Metric Tons.	Metric Tons.
Asbestos .. ..	Ural .. ..	3,845	
Asphalt and mineral pitch .. ..	Syzran, Caucasus .. ..	25,090	
China clay .. ..	Volyn, Chernigov .. ..	32,821	
Chrome ore .. ..	Perm, Orenburg, Oufa .. ..	13,233	
Coal { Anthracite .. .. Coal .. .. Lignite .. ..	Donetz, Poland, Moscow, Ural, Kutais, Turkestan, Tomsk, Kirgiz Steppe, Saghalien, Oussouyry. }	10,151,567	

\* Collection of Statistical Information respecting the Mining and Metallurgical Industries of Russia for the year 1900, St. Petersburg, 1903, p. lx. Later figures are not available.

† Official return furnished by the Scientific Mine Committee, St. Petersburg. Figures for 1901, except for output of salt, not yet available.



RUSSIA—continued.

TABLE 494—continued.

QUANTITY of MINERALS produced during the Years 1900 and 1901—continued.

Mineral.	District whence Obtained.	1900.	1901.
		Quantity.	Quantity.
		Metric Tons.	Metric Tons.
Cobalt ore and regulus .. .. .	Caucasus .. .. .	216	
Copper .. .. .	Ural, Western Siberia, Caucasus, Finland .. .. .	8,256	
Gold .. .. .	Ural, Eastern and Western Siberia, Lapland .. .. .	Kil. 38,796	
Iron (pig) .. .. .	Ural, Central Russia, Poland, Southern Russia, Northern Russia, Siberia, Finland.	2,907,269	
Iron pyrites .. .. .	Ural, Toula, Novgorod .. .. .	23,154	
Lead .. .. .	Tomsk, Transbaikai, Kirghiz Steppe, Caucasus, Turkestan	229	
Manganese ore .. .. .	Kutais, Ural, Ekaterinoslav .. .. .	802,234	
Petroleum .. .. .	Caucasus, Transcaaspian, Turkestan .. .. .	9,827,822†	
Phosphorite .. .. .	Bessarabia, Kostroma, Podolia, Smolensk .. .. .	25,663	
Platinum .. .. .	Ural .. .. .	Kil. 5,438†	
Quicksilver .. .. .	Ekaterinoslav .. .. .	305	
Salt { Rock salt .. .. . Lake salt .. .. . Salt from brine .. .. . }	Astrakhan, Perm, Ekaterinoslav, Crimea, Kharkov, Orënburg, Tomsk, Caucasus, &c. }	1,968,005	1,736,094‡
Silver .. .. .	Tomsk, Transbaikai, Kirghiz Steppe, Caucasus, Finland ..	Kil. 3,493	
Sulphate of sodium .. .. .	Tiflis, Kuban, Tomsk, Vologda .. .. .	•	
Sulphur .. .. .	Daghestan, Poland, Turkestan .. .. .	1,587	
Tin .. .. .	Finland .. .. .	4	
Zinc .. .. .	Poland .. .. .	5,963	

TABLE 495.

DEATHS from ACCIDENTS at the MINES and other WORKINGS for MINERALS during the Years 1899 and 1900.||

	Year.				Number of Deaths.	Death-rate per 1,000 Persons Employed.
	1899	...	...	...	441	1·29
	1900	...	...	...	497	1·32

Saba. (See DUTCH WEST INDIES.)

Sahara.¶

There are three important salt deposits in the Sahara, all of which are due to the natural evaporation of salt lakes, viz., the Sebka d'Idgil, which supplies Western Africa ; the Taodeni bed, which furnishes salt to the Sahel, the Niger district, and the Congo ; and lastly, the Sebka de Bilma, which sends its produce to the east and the region of Lake Tchad.

\* Figures not yet available.  
† Cooke, "Mineral and Metallurgical Industries of Russia." *Dipl. and Cons. Reports*, No. 555, Misc. Ser., 1901 [Cd. 430-10].  
‡ *Le Journal du Ministère des Finances*, St. Petersburg.  
§ *Collection of Statistical Information respecting the Mining and Metallurgical Industries of Russia for the year 1900*, St. Petersburg, 1903. Later figures are not available.  
¶ Dastre, "Le Sel," *Revue des Deux Mondes*, Vol. LXXI., 1901, p. 219.

### Sandwich Islands.\*

The mineral industries of the Sandwich Islands are of slight importance. There are large deposits of gypsum, and red and yellow ochre; sulphur is found around the volcanoes.

The extraction of salt from sea water is carried on to supply local wants.

### Saxony. (See GERMAN EMPIRE.)

### St. Martin. (See DUTCH WEST INDIES.)

### Senegal.†

Alluvial deposits of gold exist in various parts of Senegal, and especially in the valley of the Falemé river, where the metal is extracted on a small scale by the natives. In 1898, 129 kilograms of gold, valued at £15,464, were exported.

### Servia.‡

According to an official map Servia is richly endowed with mineral wealth; but until railways have been constructed and the existing cart roads improved it is idle to expect that it will become a great mining country. It possesses deposits of the ores of antimony, arsenic, chromium, copper, gold, iron, lead and mercury, besides coal, graphite, gypsum, magnesite, sulphur, marble and other stones for ornamental and building purposes.

**Coal.**—Most of the coal region lies near the Danube, which enables the mineral to be shipped down the river to districts requiring fuel and to the Black Sea. The most important workings are at Dobra, on the Danube. The coal is of Liassic Age.

True coal, said to be almost as good as English coal, occurs and is worked in the Timok Valley, near Tschuka.

Thick beds of Tertiary lignite occur at Senje, Sisovac, Jelasnica, and in many other parts of the country.

**Copper and Iron.**—The ores of these two metals have been worked in the neighbourhood of Maidanpek.

**Gold.**—This was worked in Servia by the Romans, and then many centuries later by the Austrians. Turkish invasions put a stop to mining, but now there are signs of a revival and extension of the industry. The gold is found in alluvial gravel and in quartz veins, especially in the district west of the River Timok, which forms the frontier of Bulgaria. Near Glogovica there are many veins of gold-bearing pyrites.

TABLE 496.

PERSONS EMPLOYED at MINES during the Years 1901 and 1902.

	Year.	Under and Above-ground.
1901 ... ..	2,271	
1902 ... ..	2,229	

In addition to the above, there were about 120 persons employed at quarries.

\* Day, "Mineral Resources of the Antilles, Hawaii, and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.

† Consul Arthur, "Trade of Senegal and Dependencies for the year 1898," *Dipl. and Cons. Reports*, No. 2372, Ann. Ser., 1900 [Cd. 1-9], and *Min. Jour.*, Vol. LXVIII., 1898, p. 221.

‡ Official return furnished by the Mining Department of the Ministry of Agriculture, Commerce and Industry, Belgrade; Consul Macdonald, "Trade of Servia for the years 1897-98," *Dipl. and Cons. Reports*, No. 2207, Ann. Ser., 1899 [C 9044-33]; Antula, *Recueil générale des gisements métallifères en Serbie*, Paris, 1900; and Jastrow, "The Mining Industries of Servia," *Eng. Min. Jour.*, Vol. LXX., 1900, p. 523.



## SERVIA—continued.

TABLE 497.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony (regulus) ... ..	243	204,120	312	220,166
„ (oxide)... ..	—	—	25	9,224
Bismuth ore ... ..	—	—	50	35,000
Brown coal ... ..	99,053	759,673	89,254	680,131
Cement ... ..	—	—	2,096	56,760
Chrome ore ... ..	100	7,000	—	—
Coal... ..	44,275	712,350	35,888	574,211
Copper (metal) ... ..	59	80,750	140	109,150
„ ore... ..	—	—	2,520	54,566
Gold (fine)... ..	Kilos. 30	98,881	Kilos. 19	56,977
„ concentrate ... ..	—	—	311	15,961
„ ore ... ..	—	—	1,496	20,000
Lead ... ..	—	—	6	1,183
Lead and zinc ore... ..	175	12,933	57	3,450
Lignite ... ..	26,713	134,898	28,612	163,419
Magnesite ... ..	—	—	250	5,000
Millstones ... ..	225	18,036	353,860	28,309
Silver (metal) ... ..	Kilos. 12·7	1,235	Kilos. 20·7	1,802
Total value in francs ... ..	—	2,029,876	—	2,035,309
„ „ £ sterling ... ..	—	£81,194	—	£81,412

TABLE 498.

DEATHS from ACCIDENTS at MINES during the Years 1901 and 1902.

	Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
	1901 ... ..	1	·44
	1902 ... ..	1	·45

## Siam.\*

Siam produces gems, gold, and tin ore. The gems, rubies and sapphires, are obtained from shallow diggings on the flanks of the Patat range in the Cambodian Peninsula. The gem pits afford employment to five or six thousand Shans and Laos, and the value of the output is estimated to be about £300,000 annually. Alluvial gold exists and has been worked in many parts of Siam, notably near Lophburi; reef-mining has been carried on at Kabin and Wattana.

The tin mines of the State are chiefly situated in the Siamese Malay Provinces, along the edge of the granites of the main ridge which forms the watershed of the peninsula. The total annual output of metallic tin may be estimated at about 4,000 tons, giving employment to over 15,000 persons, mostly Chinese. The royalty on tin has now been reduced to 10 per cent. of the output, and this will enable a certain number of mines, which would not pay under the old royalty, to be re-worked.

The following are the values of the metals and minerals exported from Bangkok in 1902:—Lead, £2,323; salt, £2,640; tin (91 tons), £8,940; rubies and sapphires, £3,701.†

## Singkep. (See DUTCH EAST INDIES.)

\* MS. communication from H. Warrington Smyth, and Bel, "Aperçu sur les gîtes minéraux de l'Indo-Chine Centrale," *Bull. Soc. Ind. Min.*, Vol. XII., 1898, p. 384.

† Vice-Consul Lyle, "Trade of Bangkok for the year 1902." *Dipl. and Cons. Reports*, No. 3099, Ann. Ser., 1903 [Cd. 1766-33], pp. 6 and 19.



## Spain.\*

Spain is justly celebrated for its mineral wealth. It produces more cupreous pyrites than any other country in the world, and very large amounts of lead ore and quicksilver; its iron ores are abundant and of excellent quality, and it has of recent years become an important supplier of manganese ores.

The total number of persons employed in and about mines in Spain during the year 1902 was 87,508.

*Coal.*—Nine provinces produce coal. The total output is over two-and-a-half million tons, more than half coming from the province of Oviedo. Anthracite is worked on a small scale in the province of Cordova, and lignite in nine provinces; but the total output is insignificant.

*Copper.*—The Rio Tinto mines and its neighbours show no signs of impoverishment, for the output of the province of Huelva was 2,574,176 tons. Compared with this figure, the production of the other copper-bearing provinces, such as Seville, &c., is small.

*Gold.*—Mines are being worked in the province of Corunna.

*Iron Ore.*—The province of Biscay, which includes the Bilbao district, is the great stronghold of the iron industry in Spain; most of the workings are open quarries. The total output of the province in 1902 was 5,059,405 tons, which is an increase of 89,954 tons compared with the previous year.

Next in importance after Biscay comes the province of Santander with an output of 1,133,530 tons.

*Lead.*—Most of the lead comes from the provinces of Almeria, Jaen and Murcia; much of the ore, and especially that of Murcia, contains a notable amount of silver.

*Manganese Ore.*—Mining for manganese is almost entirely confined to the province of Huelva. The output of the province in 1902 was 46,034 tons.

*Quicksilver.*—From time immemorial the Almaden mine, in the province of Ciudad Real, has been renowned as a producer of cinnabar. The other quicksilver mines are of comparatively little importance; several are worked in the province of Oviedo.

*Salt.*—Much of the salt is obtained from sea water, especially in the vicinity of Cadiz.

*Sulphur.*—In addition to the sulphur contained in cupreous iron pyrites, Spain has mines of native sulphur in the provinces of Albacete, Almeria, Murcia and Biscay.

*Tin Ore and Wolfram.*—These two minerals occur together in the provinces of Pontevedra and Corunna.

*Zinc.*—Murcia still retains its position as the principal zinc-producing province, Santander taking the second place. The two provinces between them produce nearly  $\frac{2}{10}$ ths of the country's total.

TABLE 499.

PERSONS EMPLOYED at MINES during the Years 1901† and 1902.‡

Year.			Men.	Women.	Boys.	Total.
1901	...	...	74,833	2,891	9,658	87,382
1902	...	...	81,279	2,695	3,534	87,508

\* *Estadística Minera de España correspondiente al año de 1902*, Madrid, 1903.

† " " " " " " 1901, Madrid, p. 24.

‡ " " " " " " 1902, Madrid, p. 28.

## SPAIN—continued.

TABLE 500.

PERSONS EMPLOYED in the PRINCIPAL MINING INDUSTRIES during the Years 1901\* and 1902.†

Kind of Mines.	1901.				1902.			
	Men.	Women.	Boys.	Total.	Men.	Women.	Boys.	Total.
Brown coal ... ..	914	31	80	1,025	969	25	11	1,005
Coal and anthracite ...	16,430	1,106	2,555	20,091	20,636	1,265	434	22,335
Copper ore and cupreous pyrites.	9,912	334	1,119	11,365	9,975	230	901	11,106
Iron ore ... ..	20,144	249	2,380	22,773	26,763	344	714	27,821
Lead ore ... ..	19,871	592	2,647	23,110	16,813	439	854	18,106
Quicksilver ore ... ..	1,899	2	174	2,075	1,036	1	386	1,423
Zinc ore ... ..	1,624	137	226	1,987	2,057	163	86	2,306
Other mines ... ..	4,039	440	477	4,956	3,030	228	148	3,406
Total ... ..	74,833	2,891	9,658	87,382	81,279	2,695	3,534	87,508

TABLE 501.

QUANTITY and VALUE of MINERALS produced during the Years 1901\* and 1902.†

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Pesetas.	Metric Tons.	Pesetas.
Aluminium phosphate ... ..	—	—	40	800
Aluminous earths ... ..	305	7,630	337	8,425
Anthracite ... ..	85,266	950,716	109,298	1,116,015
Antimony ore ... ..	10	750	67	5,025
Arsenical pyrites ... ..	1,323	6,641	5,648	27,340
Asphalt (rock) ... ..	3,956	40,687	6,301	63,363
Barium sulphate ... ..	1,067	17,061	642	12,319
Brown coal ... ..	95,867	506,629	84,242	396,841
China clay ... ..	2,220	8,540	3,412	32,074
Clay ... ..	185	463	295	3,362
Coal ... ..	2,566,591	28,932,395	2,614,010	26,040,194
Copper ore ... ..	23,089	45,755,819	878	62,394
Cupreous iron pyrites... ..	2,649,276		2,617,776	44,443,506
Fluor spar ... ..	—	—	93	1,753
Gold ore... ..	1,595	47,850	1,764	52,920
Graphite ... ..	—	—	20	180
Iron ore ... ..	7,906,517	40,832,382	7,904,555	39,945,963

\* Estadística Minera de España correspondiente al año 1901, Madrid, p. 24.

† " " " " " 1902, " p. 28.





SPAIN—continued.

TABLE 503.

DEATHS from ACCIDENTS at MINES, classified according to CAUSE, during the Years 1901 and 1902.\*

Cause.	1901.		1902.	
	Number of Deaths by Accidents.	Percentage of Total.	Number of Deaths by Accidents.	Percentage of Total.
Falls of ground ... ..	59	26·2	58	22·7
Explosions of firedamp ... ..	7	3·1	4	1·6
Blasting ... ..	21	9·3	31	12·2
Suffocation by gases ... ..	13	5·8	15	5·9
Irruptions of water ... ..	—	—	2	0·8
Falling down shafts ... ..	28	12·5	30	11·7
Breaking of machinery, &c. ... ..	29	12·9	42	16·5
Miscellaneous ... ..	68	30·2	73	28·6
Total ... ..	225	100·0	255	100·0

Spanish Possessions. (See CANARY ISLANDS.)

Spitzbergen.†

Coal has been discovered in several places in Spitzbergen. Bear Island is said possess workable seams of excellent coal.

Sumatra. (See DUTCH EAST INDIES.)

Surinam. (See DUTCH GUIANA.)

Sweden.‡

*Coal*.—All the Swedish collieries are in Scania, the most southerly province the kingdom. The seams, which are of Rhætic Age, are interstratified with beds fire-clay, and the two minerals are worked together.§ The thickness of the coal seam including the partings of shale, varies from three to five feet.

*Copper*.—The well-known Stora Kopparberg mine close to Falun furnishes much of the copper of Sweden, some of the silver, and nearly all of the gold.

\* *Estadística Minera de España correspondiente al año 1901*, Madrid, pp. 26 and 27, and *ibid.* 1902, Madrid, pp. 30 and 31  
† *B. u. h. Zeitung*. Vol. LIX., 1900, p. 476.  
‡ *Bidrag till Sveriges Officiella Statistik för år 1902*, Stockholm, 1903.  
§ Nordenström, *L'industrie minière de la Suède*, Stockholm, 1897.

## SWEDEN—continued.

*Iron ore.*—Sweden has long been famous as an iron-producing country, and its reputation is due partly to the excellence of its ores and partly to the fact that charcoal is employed almost exclusively as the fuel for the blast furnaces. Sweden likewise exports much iron ore, and the quantity sent away is increasing. The big workings at Gellivare and Kirunavara in Lapland furnished more than three-sevenths of the total output of Sweden in 1902. It is expected that the Kirunavara workings will soon ship 1½ million tons yearly from Narvik on the Ofoten Fjord in Norway.\* The province of Kopparberg with numerous mines comes next in importance to Lapland.

*Peat.*—The table of production takes no account of either the peat diggings or of the stone quarries. Peat is largely dug for use as household fuel, and for making peat-litter and peat-mould.

*Stone.*—Granite, using the word in its commercial sense, is quarried on the West Coast of Sweden, and also on the Baltic, and forms an important article of export. Porphyry and marble are also products of Sweden.

*Zinc.*—The Ämmeberg mines supply most of the zinc ore, which is exclusively blende.

TABLE 504.

PERSONS EMPLOYED at various MINES and FELDSPAR QUARRIES during the Years 1901 and 1902.

Year.	Kind of Workings.	Under-ground.			Above-ground.			Totals.
		Men.	Young Persons under 18.	Total.	Men.	Women and Young Persons under 18.	Total.	
1901	Coal mines ... ..	1,440	142	1,582	392	124	516	2,098
"	Iron " ... ..	4,266	163	4,429	4,842	1,204	6,046	10,475
"	Other " ... ..	822	2	824	664	305	969	1,793
"	Feldspar quarries ...	59	—	59	90	68	158	217
	Total for 1901 ...	6,587	307	6,894	5,988	1,701	7,689	14,583
1902	Coal mines ... ..	1,490	157	1,647	472	60	532	2,179
"	Iron " ... ..	4,339	155	4,494	4,780	1,222	6,002	10,496
"	Other " ... ..	885	—	885	602	246	848	1,733
"	Feldspar quarries ...	61	—	61	129	56	185	246
	Total for 1902 ...	6,775	312	7,087	5,983	1,584	7,567	14,654

\* Consul MacGregor, "Trade of Stockholm and Eastern Coast of Sweden." *Dipl. and Cons. Reports*, No. 3014. Ann Ser., 1903 [Cd. 1386-91], p. 5.

SWEDEN—continued.

TABLE 505.

QUANTITY of MINERALS obtained from MINES and FELDSPAR QUARRIES during the Years 1901 and 1902.

Mineral.	Year.			
	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum ... ..	121	13,378	132	12,526
Apatite ... ..	5,078	76,176	3,895	58,429
Coal ... ..	271,509	2,355,228	304,733	2,511,228
Copper ore ... ..	23,660	378,188	30,095	320,841
Copper, sulphate ... ..	1,224	465,135	1,257	395,882
Feldspar ... ..	13,502	163,941	17,960	175,897
Fire-clay... ..	175,876	306,099	161,312	285,972
Graphite (raw and dressed) ... ..	1,783	12,850	63	9,500
Iron ore ... ..	2,795,160	14,453,782	2,896,616	14,368,806
Iron, sulphate ... ..	140	8,477	127	7,600
Manganese ore ... ..	2,271	42,000	2,850	51,959
Manganese ore in powder ... ..	500	22,500	487	22,000
Silver and lead ore ... ..	11,366	210,767	9,378	165,688
Sulphur ... ..	—	—	74	7,400
Zinc ore ... ..	48,630	1,418,126	48,783	1,712,169
Zinc ore (calcined) ... ..	—	—	27,564	1,543,584
Zinc, sulphate ... ..	116	8,100	51	3,580
Total value in crowns ... ..	—	19,934,747	—	21,656,061
„ „ £ sterling ... ..	—	£1,095,316	—	£1,189,892

TABLE 506.

PERSONS KILLED and INJURED by ACCIDENTS at MINES and FELDSPAR QUARRIES during the Years 1901 and 1902.

Year.		Number of Persons Killed.	Number of Persons Injured.*	Death-rate per 1,000 Persons Employed.
1901	... ..	10	384	0·68
1902	... ..	16	460	1·09

Switzerland.†

That the mineral industries of Switzerland are of little importance is evident from the following tables ; nevertheless the kinds of mineral which are being obtained from underground workings are numerous, viz.: anthracite, bituminous limestone, brown coal, cobalt and nickel ore, fireclay, gold ore, graphite, gypsum, iron ore, limestone, magnesium sulphate, marble, marl, potstone, salt, sandstone, and slate.

\* Injuries causing absence from work for 14 days at least.  
† *Rapports des Inspecteurs Fédéraux des Fabriques et des Mines dans les années 1898 et 1899*, Aarau, 1900 : *Notice sur les exploitations minérales de la Suisse*, Geneva, 1896 ; and *Statistisches Jahrbuch der Schweiz*, Bern, Vol. X., 1901.



## SWITZERLAND—continued.

*Anthracite.*—Two mines, Chandoline and Granges, produce annually 1,500 to 2,000 tons of anthracite containing a high percentage of ash.

*Bituminous limestone.*—The asphalt rock of the Val de Travers, which is exported from Switzerland to various countries, is a bituminous limestone of Cretaceous age. The bed is 4 to 8 m. thick, and contains about 10 per cent. of bitumen.

*Brown coal and cement.*—With reference to the Swiss brown coal, which is of Miocene age, it is interesting to learn that seams of only 4 to 6 inches in thickness were worked for many decades near the towns of Zurich and Lausanne, and probably with profit. Nowadays the beds immediately underlying and overlying the coal are worked with it, and are used for making Roman cement, Portland cement, bricks, and manure.

*Iron.*—The largest workings for iron are at Delsberg, a mine which employs 136 workmen.

*Salt.*—Switzerland possesses five workings for salt, viz., Bex salt mine in the Rhone valley; the brine wells of Rheinfelden, Ryburg, and Kaiseraugst, in the Canton Aargau; and the brine well Schweizerhalle in the Canton Baselland. The output for 1902 was 50,990 tons.

TABLE 507.

NUMBER OF PERSONS EMPLOYED AT MINES AND UNDERGROUND QUARRIES during the Years 1901 and 1902.

Kind of Workings.	1901.		1902.	
	Number of Works.	Number of Persons Employed.	Number of Works.	Number of Persons Employed.
Mines ... ..	24	424	15	432
Underground quarries ...	104	1,217	93	1,239
Total ... ..	128	1,641	108	1,671

TABLE 508.

NUMBER OF WORKINGS AND PERSONS EMPLOYED, classified according to MINERAL worked during the Year 1902.

Kind of Mineral.	Number of Workings.		Number of Persons Employed.	
	True Mines.	Underground Quarries.	True Mines.	Underground Quarries.
Anthracite ... ..	4	—	49	—
Asphalt ... ..	2	—	103	—
Brown coal ... ..	4	—	29	—
Brown coal and cement stone ... ..				
Cement stone and hydraulic limestone ...	—	28	—	317
Cobalt and nickel ores ... ..	2	—	54	—
Gold and copper ore ... ..				

SWITZERLAND—continued.

NUMBER of WORKINGS and PERSONS EMPLOYED, classified according to MINERAL worked during the Year 1902—continued.

Kind of Mineral.	Number of Workings.		Number of Persons Employed.	
	True Mines.	Underground Quarries.	True Mines.	Underground Quarries.
Graphite ... ..	—	—	—	—
Gypsum ... ..	—	12	—	119
Iron ore ... ..	1	—	69	—
Lead ore, argentiferous ... ..	1	—	100	—
Limestone... ..	—	3	—	16
Magnesia, sulphate of ... ..	—	—	—	—
Marble ... ..	—	1	—	10
Potstone ... ..	—	2	—	33
Salt (rock salt) ... ..	1	—	28	—
Sandstone... ..	—	10	—	265
Slate ... ..	—	37	—	479
Total ... ..	15	93	432	1,239

TABLE 509.  
QUANTITY of MINERALS produced during the Years 1901 and 1902.

Mineral.	Year.	
	1901	1902.
Anthracite ... ..	Metric Tons.	Metric Tons.
Bituminous limestone ... ..	*	*
Brown coal ... ..	*	*
Cement (Portland) ... ..	156,135	175,065
„ (Roman) ... ..	16,514	17,190
Cobalt and nickel ore... ..	*	*
Fireclay ... ..	*	*
Gold ore ... ..	*	*
Graphite ... ..	*	*
Gypsum ... ..	45,987	49,807
Iron ore ... ..	*	*
Lime (hydraulic) ... ..	187,016	201,174
Magnesium sulphate ... ..	*	*

\* Figures not available.



SWITZERLAND—continued.

QUANTITY of MINERALS produced during the Years 1901 and 1902.—continued.

Mineral.	Year.	
	1901.	1902.
Marble ... ..	•	•
Marl ... ..	•	•
Potstone ... ..	•	•
Pozzolana ... ..	15,400	16,400
Salt (Bex mine and brine wells) ... ..	50,591	50,990
Sandstone ... ..	•	•
Slate ... ..	•	•

TABLE 510.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1901 and 1902.

Kind of Workings.	1901.		1902.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines ... ..	2	4.72	—	—
Underground quarries ... ..	4	3.29	1	.81

Tong-King. (See INDO-CHINA.)

Tunis.†

Tunis cannot be called an important mining country at the present time.

Iron.‡—There are large deposits of iron ore in the Regency, and it is considered that they deserve the attention of British ironmasters.

Phosphate of lime.§—This mineral is found in the Lower Eocene rocks, especially to the north and south of the mountain chain running from Wady Stah, near Gafsa, to Tamerza ; the beds may be followed for a distance of about 40 miles. The crude rock contains from 58 to 62 per cent. of phosphoric acid.

Salt.—This mineral is obtained from salt marshes and lakes. The total output of salt in 1902 was 21,600 metric tons, of which 9,500 were produced at salt pans worked by the State and 12,100 tons from Ras Dimas, Zouila, Zarzis and Soukra salt lakes. The average value may be reckoned at about 3.22 francs per ton.

Zinc ore.—The lead and zinc mines of Tunis employ about 16,000 workmen, of whom 600 are Europeans, and the total value of their output in 1902 was more than £89,080.

\* Figures not available.

† Information furnished by the French Government, and published in the *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1901, and pour l'année 1902.*

‡ Consul-General Berkeley, "Trade of the Regency of Tunis." *Dipl. and Cons. Reports*, No. 2915, Ann. Ser. 1902, [Cd. 786-219], p. 20.

§ *Etude des gisements de phosphates de Gafsa et du Chemin de fer de Sfax à Gafsa*, Paris, 1896.



TUNIS—continued.

TABLE 511.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.\*

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value
	Metric Tons.	Francs.	Metric Tons.	Francs.
Clay... ..	—	—	4,500	8,550
Flags ... ..	—	—	826	7,516
Lead ore ... ..	8,200	669,000	12,900	812,000
Limestone ... ..	34,800	740,880	24,595	422,197
Paving stones ... ..	—	—	3,164	43,664
Phosphate of lime ... ..	172,375	2,642,508	264,930	5,378,079
Plaster and cement ... ..	12,984	601,940	5,650	269,240
Potter's clay ... ..	6,375	7,500	7,000	11,200
Salt from marshes and salt lakes ... ..	16,900	37,200 (a)	21,600	70,000
Stone (dressed for building) ... ..	873,805	1,531,268	128,916	379,245
„ (broken) ... ..	—	—	170,930	376,046
Zinc ore (calcined) ... ..	17,900	1,081,000	18,400	1,415,000
Total value in Francs ... ..	—	7,311,296 (a)	—	9,192,737
„ „ in £ sterling ... ..	—	£292,452	—	£367,709

(a) Corrected figures.

Turkey.

The mineral resources of the Ottoman Empire are great, but almost entirely undeveloped. No official statistics are published.

*Alum.*—A little alum is manufactured.

*Antimony.*—Several antimony mines are being worked ; the Allkhar mines, near Rozdan, yielded 1,200 tons of 55 per cent. ore in 1892, and the shipments from mines near Aidin amounted to 1,322 tons in 1895. In 1900 the quantity exported from Salonica amounted to 267 tons, valued at £2,793, and in 1901, 224 tons valued at £4,248 were exported from Smyrna.†

*Arsenic.*—Orpiment occurs with the antimony ore at Allkhar, near Rozdan, and about 500 tons are exported yearly ; both orpiment and realgar are mined in Macedonia. 270 tons, valued at £4,320, were exported from Salonica in 1900 and only 50 tons in 1902.‡

*Asphalt.*—Bitumen mines are worked at Selenitza, near Valona, and 3,500 tons of mineral were exported in 1901.‡

\* Return furnished by the French Government and published in the *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1901 and pour l'année 1902.*

† Consular-Assistant Heard, "Trade of Salonica and District for the year 1902." *Dipl. and Cons. Reports*, No. 3,100, Ann. Ser., 1903 [Cd. 1766-34]. Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1897-99." *Dipl. and Cons. Reports*, No. 2,462, Ann. Ser., 1900 [Cd. 1-99], p. 23. Whitehead, "Mining Industries and Forestry in Turkey." *Dipl. and Cons. Reports*, No. 589, Ann. Ser., 1903 [Cd. 1387-2].

‡ Vice-Consul Waugh, "Trade of Constantinople and District for the year 1901." *Dipl. and Cons. Reports*, No. 2813, Ann. Ser., 1902 [Cd. 786-117].

*Boracite*.—Borate of calcium, known in the trade as boracite, and to mineralogists as pandermite, is worked near the port of Panderna in Asia Minor. The annual output is about 9,000 tons.\*

*Chrome Ore*.—Chromite occurs in irregular bunches in serpentine. Daghardi mine exports from 12,000 to 15,000 tons yearly by the port of Déréndjé, in the Gulf of Ismidt. Three mines in the Merkenz-Sandjak of Broussa export 6,000 to 7,000 tons a year.\* In 1902 the quantity exported from Salonica was 11,000 tons.†

*Coal*.—The only coal mines deserving mention at the present time are at Eregli. The output of the collieries was about 200,000 tons in 1901.\*

*Copper*.—Copper ores are worked in various places. The mines produce annually about 5,800 tons of crude copper. The Arghana Maden is the richest copper mine in Turkey; the average ore contains about 30 per cent. of copper. 1,072 tons of copper, valued at £38,220, were exported from Diarbekr\* and 130 tons were obtained in the Trebizond Vilayet‡ in 1901. At Baibourt mine in the Erzeroum District the value of copper obtained in 1902 was £2,000.§

*Emery*.—This mineral was discovered in Asia Minor about fifty years ago; the quantity of the emery shipped from Smyrna in 1901 was 16,300 tons, valued at £53,028.‡

*Fuller's earth* is quarried on a large scale. The deposits extend over 60 miles in length, and are of varying breadth. The greater part of their area is comprised in the Sandjak of Kutahia, and principally in the Caza of Eskichehir, between the two banks of the Poursaktchai and the left bank of the River Sakaria.\*

*Gold*.—A little alluvial gold is obtained in Thessaly and in some of the valleys of Macedonia. The river Pactolus, so famous in ancient times, no longer yields gold.

*Iron*.—The deposits of iron ore which were utilized in former days have ceased to be worked.

*Manganese*.—There are manganese mines in Macedonia and in Asia Minor. 38,100 tons of ore, valued at £114,300, were exported from Salonica in 1900, and 5,800 tons were exported from Salonica and 47,000 tons from Stratonî in 1902.‡

*Marble*.—Beautiful mottled marble is now being quarried in the Island of Scio.||

*Meerschaum*.—Mining meerschaum is an industry of some importance at Sari-sou, Sépétjji, Gheikli and Menlou, and several thousand persons are employed in digging the stone and preparing it for the market.\*

*Petroleum*.—Oil is obtained from wells at Myriofito and Hora on the north coast of the Sea of Marmora.\*

*Salt*.—This is a Government monopoly; the mineral is obtained from sea water, brine lakes or springs, and rock salt mines. The rock salt mines are worked near Van in Armenia. 203,128¶ tons of salt were produced in the year 1893-4. Rock salt is also widely distributed over many parts of Tehama.\*\*

*Silver-lead*.—Deposits of argentiferous galena are worked at Balia, in the Sandjak of Karassi, and at Avnie, in the Caza of Adramit. The Kodja Gumush mine at Balia produces annually from 4,000 to 6,000 tons of ore, yielding 82 per cent. of lead and from 1½ to 4 per cent. of silver.\* The output of fine silver for Turkey in 1901 is stated in the Annual Report of the Director of the United States Mint for 1902 to have been 429,180 ozs. (Kilos 13,352).

*Zinc Ore*.—Calamine deposits are worked by a French company in the Island of Scio.|| In 1901 the quantity of zinc exported from Trizibond was 1,700 tons.‡

\* Vice-Consul Waugh, "Trade of Constantinople and District for the year 1901." *Dipl. and Cons. Reports*, No. 2,813, Ann. Ser., 1902 [Cd. 786-117].

† Consular-Assistant Heard, "Trade of Salonica and District for the Year 1902." *Dipl. and Cons. Reports*, No. 3,100, Ann. Ser., 1903 [Cd. 1766-34].

‡ Whitehead, "Mining Industries and Forestry in Turkey." *Dipl. and Cons. Reports*, No. 589, Ann. Ser., 1903 [Cd. 1387-2].

§ Consul Lamb, "Trade of Consular District of Erzeroum for the Year 1902." *Dipl. and Cons. Reports*, No. 3,003, Ann. Ser., 1903 [Cd. 1386-80].

¶ Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1897-99." *Dipl. and Cons. Reports*, No. 2,462, Ann. Ser., 1900 [Cd. 1-99].

\*\* *Ost. Zeitsch. f. B. u. Huttenwesen*, Vol. XLIV., 1897, p. 223.

\* Consul Devey, "Trade of Jeddah and Hodeidah for the Year 1897." *Dipl. and Cons. Reports*, No. 2,203, Ann. Ser., 1899 [C 904-29].

United States.\*

The United States are the greatest producers of coal, iron, and copper in the world

Coal.—The total production of coal in 1902 was 273,600,961 metric tons, of which 37,533,879 metric tons were anthracite and 236,067,082 true bituminous coal. More than one-half of the mineral fuel raised in the United States is produced by Pennsylvania. The anthracite comes almost entirely from Pennsylvania; Colorado and New Mexico yield very small quantities.

In the case of anthracite there is a decrease of more than 23½ million metric tons; in bituminous coal an increase of more than 31 million metric tons; taking anthracite and bituminous coal together, there is a net increase of nearly 7½ million metric tons.

Much progress is being made in the use of coal-cutting machinery. According to Table 512, supplied by the United States Geological Survey, the amount of bituminous coal mined by machines in 1902 was more than double what it was in 1898. The amount of machine-mined coal in 1902 was 23.08 per cent. of the total.

TABLE 512.

BITUMINOUS COAL MINED by MACHINES in the UNITED STATES during the Years 1898–1902.

States.	Year.				
	1898.	1899	1900.	1901.	1902.
	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).
Colorado ... ..	225,646	527,115	756,025	319,678	857
Illinois ... ..	3,415,635	6,085,312	5,083,594	5,774,639	7,112
Indiana ... ..	1,414,342	1,713,125	1,774,045	1,852,058	2,421
Kentucky ... ..	1,366,676	1,625,809	2,339,944	2,254,711	3,091
Montana ... ..	681,613	843,710	1,045,115	748,981	691
Ohio ... ..	5,191,375	6,822,524	8,835,743	9,908,316	12,094
Pennsylvania ... ..	16,512,480	22,000,722	26,867,053	29,591,368	35,058
West Virginia ... ..	1,323,929	1,881,125	3,418,377	4,817,943	5,738
Wyoming ... ..	631,431	693,712	653,314	804,826	588
Other States producing less than half a million tons each annually.	1,650,017	1,770,781	2,011,313	1,770,815	1,958
Total ... ..	32,413,144	43,963,935	52,784,523	57,843,335	69,611

The kinds of machines employed are set forth in the following table.

\* Official information furnished by the United States Geological Survey, Washington. Many useful statistics are contained in the annual reports of the Survey to the United States, and much valuable information concerning mines and minerals all over the world are contained in the volumes entitled, *The Mineral Industry: Its Statistics, Technology and Trade*.



## UNITED STATES—continued.

TABLE 513.

COAL-CUTTING MACHINES employed in the UNITED STATES in the Year 1902, arranged according to their mode of action.

State.	Chain Machines.	Percussive Machines.	Long Wall Machines.	Total.
Alabama ... ..	9	57	—	66
Arkansas ... ..	7	—	—	7
Colorado ... ..	44	42	12	98
Illinois ... ..	95	411	2	508
Indiana ... ..	167	102	—	269
Indian Territory ... ..	17	6	—	23
Iowa ... ..	9	9	13	31
Kansas ... ..	6	—	—	6
Kentucky ... ..	101	217	—	318
Maryland ... ..	—	25	—	25
Michigan ... ..	10	48	—	58
Missouri ... ..	6	—	14	20
Montana ... ..	4	61	—	65
New Mexico... ..	9	8	—	17
North Dakota ... ..	8	2	—	10
Ohio ... ..	515	41	3	559
Pennsylvania ... ..	814	1,800	6	2,620
Tennessee ... ..	11	27	—	38
Texas... ..	—	7	1	8
Utah ... ..	—	13	—	13
Virginia ... ..	11	—	—	11
West Virginia ... ..	319	260	—	579
Wyoming ... ..	20	49	—	69
Total ... ..	2,182	3,185	51	5,418

*Copper.*—There are three great copper States : Montana, Michigan, and Arizona ; the first furnished in 1902 about 43·8, the second 25·9, and the third 18·2 per cent. of the total output of the whole country, which was 299,151 metric tons of metal, equal to more than half of the world's production.

*Gold.*—The principal gold-producing States are Colorado with a yield in 1902 of 1,377,175 ozs., and California with a product of 812,319 ozs.

*Igneous rocks.*—The value of granite, &c., quarried in 1902 amounted to \$18,718,457. The principal producing States are California, Maine, Massachusetts, New Hampshire and Vermont.

*Iron.*—More than two-thirds of the iron is obtained from the States of Minnesota and Michigan ; the former produced 15½ million metric tons of ore in 1902, and the latter 11½ million tons. The total output of ore from the United States was 36 million metric tons, an increase of 6¾ million tons compared with 1901 : about 86 per cent. of the ore is red hematite.

*Lead.*—Idaho was again the greatest producer in 1902, followed closely by Colorado ; whilst Utah and Montana are likewise large lead-producing States. The total production of 270,000 short tons was slightly below that of the previous year.

*Marble.*—The value of the total output of marble in 1902 amounted to \$5,044,382 ; of this amount Vermont contributed \$2,628,164, or more than one-half.

*Mineral Waters.*—The output of all the mineral springs in the United States amounted to 64,859,451 gallons, valued at \$8,793,761, which is an increase of over 9 million gallons in quantity and 1 million dollars in value compared with 1901. The leading States in 1902 were Massachusetts and Michigan, with a production of over 8 million gallons each. Next comes Texas and New York, while Pennsylvania and Wisconsin were also large producers.

*Natural Gas.*—At the close of the year 1902, there were 14,349 boreholes producing natural gas. The output of the year was 205,033,000,000 cubic feet, valued at \$50,754,957, or more than 6 millions sterling.



## UNITED STATES—continued.

*Petroleum.*—The yield of the oil-wells of the United States almost equals that of all the rest of the world put together. In 1902 the production was 88,277,310 barrels of 42 gallons, or nearly 19 million barrels more than the previous year.

The principal oil-producing States are Ohio, West Virginia, Pennsylvania, California, Indiana, Texas, and New York.

*Phosphate of Lime.*—The three great phosphate States are Florida, South Carolina, and Tennessee, with a production in 1902 of 785,430, 313,365 and 390,779 tons respectively.

*Quicksilver.*—This mineral is obtained in California, Texas and Oregon. The first-named State produced in 1901 about nine-tenths of the total output, and Texas about one-tenth. The quantity obtained in Oregon is extremely small.\*

*Salt.*—Previous to 1893 Michigan was the chief salt-producing State; in that year New York assumed the lead and maintained it until 1901, when Michigan again resumed the supremacy with a production of 8,131,781 barrels against 8,523,389 barrels obtained by New York. The total production of the whole country amounted to 23,849,221 barrels.

*Silver.*—The silver yield for 1902 amounted to 55,500,000 ozs., which was 286,000 ozs. more than in 1901. (The production of Colorado, owing to the decline in the grade of ores extracted, fell off by 2,761,800 ozs.; and Montana, Idaho, and South Dakota increased their output by 112,100, 311,900 and 262,200 ozs. respectively.)

*Zinc.*—The maximum production of zinc in the United States was reached in 1902 by the output of 156,927 short tons; Arkansas, Kansas, Illinois, Missouri, New Jersey, and Wisconsin are the principal producing States.

It is beyond the province of this Report to enter into minute details concerning each individual State; but a few facts relating to those in which mining is one of the important industries may with propriety be inserted from time to time.

## ILLINOIS.†

This State comes second among the coal-producing States, though a very long way behind Pennsylvania. The output of Illinois for the year ending 30th June 1902 was 30,021,300 short tons, or an increase of more than 3 million tons compared with 1901.

The death-rate from accidents in 1901–2 was 2·2 per 1,000 persons employed: more than 55 per cent. of the deaths were caused by falls of ground. The average death-rate for the 20 years 1883–1902 is 2·1, or slightly less than last year's figure, whilst the output since 1883 has been considerably more than doubled.

The amount of coal cut by machinery during the year 1901–02 was 6,497,123 tons, and 464 machines were employed.

## PENNSYLVANIA.‡

The most important mining State is Pennsylvania, which produced 98,946,203 short tons of bituminous coal in 1902, as against 80,914,236 in 1901, and 36,911,554 long tons of anthracite, as against 59,905,951. The total decrease in the output for the year was 7,721,758 short tons. The number of persons employed in and about mines of bituminous coal in 1902 was 135,386, and in and about anthracite mines 148,141. The death-rate per 1,000 persons employed in and about bituminous mines was 3·37, and in and about anthracite 2·70; and the death-rate from accidents underground per 1,000 persons employed underground in all coal mines was 3·30: (nearly 50 per cent. of the total deaths at bituminous and anthracite mines were due to falls of ground.)

\* Phillips, "The Terlingua Quicksilver Deposits, Brewster County," *The University of Texas Mineral Survey, Bulletin* No. 4, October, 1902, p. 52.

† *Twenty-first Annual Coal Report prepared by the Illinois Bureau of Labor Statistics, 1902, Springfield, Ill., 1903.*

‡ *Report of the Bureau of Mines of the Department of Internal Affairs of Pennsylvania, 1902, Harrisburg, 1903.*

UNITED STATES—continued.

TABLE 514.

PERSONS EMPLOYED at COAL MINES in the various STATES during the Years 1901 and 1902.\*

State.	1901.		1902.	
	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.
Alabama ... ..	17,370	524	16,439	630
Arkansas... ..	3,144	578	3,595	541
California ... ..	428	353	217†	402
Colorado... ..	8,870	643	8,953	827
Georgia ... ..	766	448	755	548
Idaho ... ..	—	—	20	202
Illinois ... ..	41,880	653	47,411	695
Indiana ... ..	12,968	534	15,457	611
Indian Territory ... ..	6,706	361	5,574	506
Iowa ... ..	12,653	444	12,434	475
Kansas ... ..	9,928	494	9,461	557
Kentucky ... ..	10,307	531	13,727	491
Maryland ... ..	5,333	959	5,827	905
Michigan ... ..	2,276	545	2,344	412
Missouri... ..	9,871	385	9,739	399
Montana... ..	2,158	647	1,938	805
New Mexico ... ..	2,478	438	1,849	567
North Carolina ... ..	25	480	40	575
North Dakota ... ..	280	595	402	563
Ohio ... ..	32,111	652	38,951	604
Oregon ... ..	187	369	265	248
Pennsylvania { Anthracite	145,309	464	148,141	279
	101,904	808	112,475	876
Tennessee ... ..	9,046	402	8,860	496
Texas ... ..	3,051	363	2,369	381
Utah ... ..	1,712	773	1,826	862
Virginia ... ..	4,152	657	3,912	814
Washington ... ..	4,545	567	4,404	602
West Virginia ... ..	30,935	778	35,500	692
Wyoming ... ..	5,151	871	5,250	844
Total for United States ...	485,544	604	518,135	582

\* Official Return furnished by the United States Geological Survey, Washington.  
† Includes 10 men in Alaska.



UNITED STATES—continued.

TABLE 515.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES, 1901 and 1902.\*

Product.	Customary Measures.	1901.			1902.			
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.	
		Customary Measures.	† Metric Tons.		Customary Measures.	† Metric Tons.		
<i>Non-Metals.</i>								
Arsenious oxide .. .. .	Short tons ..	—	—	\$ —	1,353	1,227	\$ 81,180	
Asbestos .. .. .	" ..	747	678	13,498	2,505	2,273	46,200	
Asphaltum .. .. .	" ..	63,134	57,290	555,335	66,238	60,091	236,728	
Barytes .. .. .	" ..	49,070	44,528	157,844	61,688	55,945	208,154	
Bauxite .. .. .	Long tons ..	18,905	19,205	79,914	29,222	30,691	128,206	
Borax .. .. .	{ refined crude	Short tons ..	5,344	4,849	697,307	16,542	15,007	2,292,614
		" ..	17,887	16,231	314,811	2,600	2,359	91,000
Bromine .. .. .	Pounds ..	552,043	250	154,573	513,890	233	128,472	
Building stone .. .. .	—	—	—	55,615,926	—	—	\$64,271,677	
Cement .. .. .	Bls., 300 lbs. ..	20,068,737	2,731,679	15,766,789	25,753,504	3,504,514	25,366,380	
Chromic iron ore .. .. .	Long tons ..	368	374	5,790	315	320	4,567	
Clay (brick) .. .. .	—	—	—	13,900,000	—	—	15,000,000	
" (all other than brick) ..	Short tons ..	—	—	2,576,932	1,455,357	1,320,291	2,061,072	
Coal, anthracite, .. .. .	Long tons ..	60,242,560	61,226,558	112,504,020	36,940,710	37,533,879	78,173,586	
" bituminous .. .. .	Short tons ..	225,826,849	204,824,546	236,406,449	426,216,744	236,067,082	290,806,499	
Cobalt oxide .. .. .	Pounds ..	13,360	6	24,048	3,730	2	6,714	
Corundum and emery .. .. .	Short tons ..	4,305	3,907	146,040	4,251	3,856	104,605	
Feldspar .. .. .	" ..	34,741	31,525	220,422	45,287	41,084	250,424	
Fibrous talc .. .. .	" ..	69,200	62,795	483,600	71,100	64,501	615,350	
Flint .. .. .	" ..	34,420	31,234	149,207	36,365	32,990	144,209	
Fluorspar .. .. .	" ..	19,588	17,773	113,803	48,818	44,287	275,682	
Fuller's earth .. .. .	" ..	14,112	12,806	96,835	11,492	10,425	98,144	
Crystalline quartz .. .. .	" ..	—	—	—	15,104	13,702	43,085	
Garnet (abrasive) .. .. .	" ..	4,444	4,032	168,100	3,921	3,562	132,820	
Glass Sand .. .. .	" ..	—	—	—	943,135	855,606	807,797	
Graphite .. .. .	{ Crystalline Amorphous	Pounds ..	3,987,612	1,800	187,714	3,966,824	1,799	227,508
		Long tons ..	899	822		25,455	25,364	
Grindstones .. .. .	—	—	—	580,703	—	—	667,431	
Gypsum .. .. .	Short tons ..	659,659	598,602	1,577,493	816,478	740,704	2,089,341	
Lithium .. .. .	" ..	—	—	—	1,245	1,129	25,751	
Infusorial earth and Tripoli ..	" ..	4,020	3,648	52,950	5,665	5,139	53,244	
Limestone for iron flux .. .. .	Long tons ..	8,540,168	8,679,663	4,859,836	411,878,675	12,009,415	5,249,753	
Magnetite .. .. .	Short tons ..	13,172	11,953	43,057	3,086	2,800	19,639	
Manganese ore .. .. .	Long tons ..	11,995	12,191	116,722	16,477	16,742	177,911	
Marls .. .. .	Short tons ..	99,580	90,635	124,880	12,439	11,285	12,741	
Mica .. .. .	{ Sheet Scrap	Pounds ..	360,060	163	98,859	419,266	190	84,843
		Short tons ..	2,171	2,200	19,710	1,377	1,249	34,006
Millstones .. .. .	—	—	—	57,179	—	—	69,808	
Mineral waters .. .. .	{ Gallons sold Litres ..	55,771,188	—	7,588,962	64,859,451	—	8,793,761	
		235,744,812			294,986,192			
Monazite .. .. .	Pounds ..	748,736	340	59,262	802,000	364	64,160	
Natural gas .. .. .	—	—	—	27,067,506	—	—	30,754,967	
Oilstones .. .. .	—	—	—	153,300	—	—	113,908	
Paints, mineral .. .. .	Short tons ..	61,460	55,771	789,962	35,479	32,180	360,885	
Petroleum .. .. .	{ Bls., 42 gals. Litres ..	69,369,194	—	60,417,335	583,277,310	—	70,981,625	
		12,318,941,168			10,845,534,514			
Phosphate rock .. .. .	Long tons ..	1,483,733	1,507,958	5,316,403	1,548,720	1,573,588	4,922,948	
Precious stones .. .. .	—	—	—	289,050	—	—	338,500	
Pyrites .. .. .	Long tons ..	234,825	238,661	1,024,449	207,874	211,212	947,089	
Rutile .. .. .	Pounds ..	44,250	20	5,710	1	1	1	
Salt .. .. .	Bls., 280 lbs. ..	20,566,661	2,612,824	6,617,449	23,849,221	3,029,022	5,668,636	
Soapstone .. .. .	Short tons ..	28,643	25,992	424,888	20,854	24,362	525,157	
Sulphur .. .. .	" ..	7,990	6,978	223,430	¶	¶	¶	
Uranium and Vanadium .. .. .	" ..	—	—	—	43,810	3,456	48,125	
Zinc, white .. .. .	" ..	46,500	42,196	3,720,000	52,645	47,759	4,016,499	
Total value of non-metals in \$ ..	.. ..	—	—	567,261,144	—	—	615,698,245	
Total value of non-metals in £ sterling.	.. ..	—	—	£116,729,400	—	—	£126,426,744	

\* Official Return furnished by the United States Geological Survey, Washington.  
† The United States Geological Survey Department calculates on the basis of 2,204.6 lbs. = 1 metric ton.  
‡ Represents production from Pennsylvania only.  
§ Partly estimated and subject to correction.  
|| Included under unspecified products.  
¶ Included under pyrites.

UNITED STATES—continued.

TABLE 517.

PRODUCTION of IRON ORES.\*

State.				Red Hematite.	Brown Hematite.	Magnetite.	Carbonate.	Total.
				Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.—
Minnesota...	...	...	...	15,380,720	—	—	—	15,380,720
Michigan ...	...	...	...	11,257,025	—	56,992	—	11,314,017
Alabama ...	...	...	...	2,606,832	1,025,038	—	—	3,631,870
Other States	...	...	...	1,777,836	2,333,523	1,658,987	28,086	5,798,432
Total for 1902 ...				31,022,413	3,358,561	1,715,979	28,086	36,125,039
„ 1901 ...				24,398,137	3,065,990	1,842,691	52,507	29,359,325

TABLE 518.

DEATHS from ACCIDENTS at COAL MINES in the various STATES, during the Years 1901 and 1902.†

State.				1901.			1902.		
				Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.
Alabama ...	...	...	...	41	2.36	201,387	50	2.79	187,424
Arkansas ...	...	...	...	18	5.72	91,558	13	3.62	123,065
California...	...	...	...	—	—	—	—	—	—
Colorado ...	...	...	...	55	6.20	98,637	73	8.11	83,439
Georgia ...	...	...	...	†	—	—	†	—	—
Illinois§ ...	...	...	...	99	2.24	244,141	99	2.15	275,102
Indiana§ ...	...	...	...	24	1.98	265,323	24	1.83	331,246
Indian Territory§	...	...	...	49	7.31	44,849	60	9.62	41,456
Iowa§ ...	...	...	...	27	2.05	182,895	55	4.23	90,953
Kansas ...	...	...	...	16	1.61	277,934	30	3.17	144,466
Kentucky ...	...	...	...	21	2.04	236,366	19	1.38	292,264
Maryland ...	...	...	...	12	2.25	386,655	11	2.15	425,407
Michigan ...	...	...	...	6	2.64	187,725	7	2.99	113,424
Missouri ...	...	...	...	15	1.52	230,011	10	1.09	368,645
Montana ...	...	...	...	7	3.24	180,931	†	—	—
New Mexico ...	...	...	...	9	3.63	109,553	17¶	7.26	72,550
North Carolina	...	...	...	†	—	—	†	—	—
North Dakota ...	...	...	...	†	—	—	†	—	—
Ohio ...	...	...	...	72	2.15	256,116	95	2.54	228,510
Pennsylvania {	Anthracite	...	...	513	3.47	118,683	300	2.70	127,021
	Bituminous	...	...	301	2.56	243,937	456	3.37	178,581

\* Return furnished by the United States Geological Survey, Washington.  
† Compiled from figures furnished by the United States Geological Survey, Washington, 1902, the Reports of Inspectors of Mines for the various States, and *Eng. Min. Jour.*, Vol. LXXVI., 1903, p. 347.  
‡ No report.  
§ For Fiscal Years ended June 1901 and 1902.  
|| " " year " June 1901.  
¶ " " " " June 1903.

UNITED STATES—*continued.*DEATHS from ACCIDENTS at COAL MINES in the various STATES, during the Years 1901 and 1902—*continued.*

State.	1901.			1902.		
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.
Tennessee ... ..	44	4.86	74,932	226	25.51	16,989
Texas ... ..	•	—	—	•	—	—
Utah ... ..	9	5.26	133,355	8	3.11	186,138
Virginia ... ..	•	—	—	•	—	—
Washington ... ..	27	5.94	86,651	34	7.83	71,796
West Virginia† ... ..	130	4.47	158,634	120	3.41	197,785
Wyoming‡ ... ..	41	7.96	99,273	13	2.27	329,381
Total and average for States for which figures have been received.	1,536§	3.10	168,075	1,720	3.25	153,236

An explosion of gas in Fraterville Mine at Coal Creek, Tennessee, belonging to the Coal Creek Coal Company, caused the loss of 205 lives on the 19th May, 1902.¶

112 persons lost their lives from an explosion of gas in the Rolling Mill bituminous coal mine at Johnstown, Pennsylvania, on the 10th July, 1902. The gas was ignited by coming into contact with a naked light in a part of the mine where none but safety lamps should have been used.\*\*

Complete statistics concerning the fatalities at ore mines are lacking.

There were 44 deaths from accidents,†† equivalent to 3.11 per 1,000 persons employed, at the Lake Superior copper mines during the year ended 30th September, 1902.

The death-rates of the persons employed underground at the metalliferous mines of Colorado‡‡ during the seven years 1896 to 1902 have been as follows :—5.966, 5.876, 5.458, 3.743, 3.823, 4.919, and 3.274. All these mortality rates are high.

In the metalliferous mines of Montana §§ there were 47 persons killed in 1902, equal to a death-rate of 3.41 per 1,000 persons employed.

In the lead and zinc mines of the State of Missouri ||| 14 fatalities happened in the year 1902, and the death-rate was 1.23 per 1,000 persons employed.

\* No report.

† For Fiscal Year ended June 1901 and 1902.

‡ For year ended September 1901 and 1902.

§ Excluding Georgia, North Carolina, North Dakota, Texas, and Virginia.

|| Excluding Georgia, Montana, North Carolina, North Dakota, Texas, and Virginia.

¶ Eng. Min. Jour., 24th May, 1902, p. 740.

\*\* Pennsylvania, Department of Internal Affairs, Part V., Report of Bureau of Mines, 1902, Harrisburg, 1903, p. 59.

†† Annual Report of the Inspector of Mines for Year ending 30th September 1902. Houghton, 1902.

‡‡ Report of the State Bureau of Mines for the Years 1901-2. Denver, 1903, p. 250.

§§ Fourteenth Annual Report of the Inspector of Mines of the State of Montana for the years 1901 and 1902, Helena, 1903.

||| Sixteenth Annual Report of the State Lead and Zinc Mine Inspector of the State of Missouri for the year ending 31st December, 1902, Jefferson City, 1903.



UNITED STATES—*continued.*

The year 1902 is likely to be remembered in the annals of coal mining in the United States as the year of the great strike at the anthracite collieries, which lasted nearly six months. It is regarded as the "greatest labour difficulty that has ever occurred on this continent, if not in the world."\*

The losses due to the strike among the mine owners, workmen and railway companies amounted to more than 20 million sterling.†

The object of the strike was to obtain an increase of wages and a reduction in the hours of labour.

A Commission was appointed by the President, and after sitting continuously for nearly 3 months it presented its Report ‡ on the 21st March, 1903, awarding substantial increases of wages.

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United States Possessions.—(See CUBA, PHILIPPINE ISLANDS, AND PORTO RICO.)

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Uruguay.

The number of persons employed at mines and quarries in the Republic of Uruguay is unknown. Auriferous quartz appears to be the principal mineral worked; as the quantity of gold obtained in 1902 was only 131 kilos, the number employed in mining is not likely to be large. §

TABLE 519.

QUANTITY and VALUE of GOLD produced in 1901 and 1902.§

Mineral	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
Gold ... ..	Kilos. 72	£ 6,735	Kilos. 131	£ 12,295

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\* *Pennsylvania, Department of Internal Affairs, Part V., Report of Bureau of Mines, 1902.* Harrisburg, 1903, p. 28.

† *Op. cit.*, p. 51.

‡ *Report to the President on the Anthracite Coal Strike of May-October, 1902*, by the Anthracite Coal Strike Commission, Washington, 1903—and also *Report to the President on the Anthracite Coal Strike*, Bulletin of the Department of Labor, No. 43, Washington, 1902—and *Report of Anthracite Coal Strike Commission*, Bulletin of the Department of Labor, No. 46 Washington, 1903.

§ Return furnished by the "Departamento Nacional de Ingenieros. Seccion Industrial y de Minas," Montevideo.

|| Fine Gold 70%, Fine Silver 30%.

Venezuela.\*

According to official statements the country abounds in asphalt, coal, petroleum, salt, and sulphur, as well as in the ores of copper, gold, iron, lead, silver, and tin ; but these rich mineral resources are almost entirely neglected.

*Asphalt.*—The quantity exported from Maracaibo in 1902 was 4,049 metric tons, valued at 392,459 bolivares, or £15,543.

*Gold.*—The gold mining industry does not make much progress. The precious metal is obtained mainly from quartz veins in the Caratal or Yuruari district.

*Iron.*—The deposits of iron ore at Imataca, on the Lower Orinoco, are not yet being worked.

*Salt* is a Government monopoly ; the quantity obtained in 1902 was 10,153 metric tons, valued at 2,842,860 bolivares (£112,589).

TABLE 520.

QUANTITY and VALUE of GOLD exported from Ciudad Bolivar in 1900 and 1901.

1900.		1901.	
Gold.		Gold.	
Quantity.	Value.	Quantity.	Value.
Kilos. 600	£ 63,904	Kilos. 842	£ 89,151

† Acting Consul Andral, "Trade of Venezuela for the Year 1902." *Dipl. and Cons. Reports*, No. 3,017 Ann. Ser. 190 [Cd. 1386-94], and Consul de Lemos "Trade of Ciudad Bolivar for the Year 1901." *Dipl. and Cons. Reports*, No. 2,772 Ann. Ser., 1902 [Cd. 786-76].





	Page.		Page.
Accidents, Fatal, at Quarries— <i>cont.</i>		Anthracite, Output of— <i>cont.</i>	
" " Railways, tramways, &c.	26, 27, 103, 107, 108	Russia ... ..	443
" " Ropes or chains breaking	26, 27, 103, 107	Spain ... ..	448
" " at Quarries in :		United States ... ..	462
Algeria ... ..	302, 361	Antimony, Price in London ... ..	165
Belgium ... ..	302, 379	" Smelters and refiners ... ..	165
France ... ..	302, 399	" or Antimony ore, Output of :	
German Empire ... ..	302, 408	United Kingdom ... ..	165
India ... ..	346	Algeria ... ..	360
Italy ... ..	302, 426	Australia... ..	309
Newfoundland ... ..	302, 349	Austria ... ..	365
Portugal ... ..	438	Bolivia ... ..	380
Switzerland ... ..	302, 455	British Borneo ... ..	323
" " at Petroleum Workings :		Chili ... ..	384
Austria ... ..	367, 369	China ... ..	386
" " to Young persons ... ..	35, 73	France ... ..	397
" Non-fatal, at Mines ... ..	28-31	Hungary... ..	372
" " Quarries ... ..	32, 33	Italy ... ..	425
" Notification of ... ..	119	Japan ... ..	427
Actinolite, Output of Canada ... ..	328	Mexico ... ..	430
" " Ontario ... ..	331	New South Wales ... ..	311
Acts of Parliament relating to Mines and Quarries	5, 118, 119	New Zealand ... ..	351
Aden, Output of Salt ... ..	301, 308	Portugal ... ..	438
Aerial inclines, Accidents at Quarries ... ..	108	Sarawak ... ..	323
Aire and Calder Navigation, Coal and Coke traffic ... ..	191	Servia ... ..	446
Alabama, Accidents ... ..	464	Spain ... ..	448
" Output of Iron Ore ... ..	464	Turkey ... ..	456
" Persons employed ... ..	461	United States ... ..	463
" Coal-cutting machines ... ..	459	Antrim Co., Bauxite... ..	163, 172
Algeria, Accidents ... ..	302, 361	" Chert and flint... ..	162, 175
" Mineral output ... ..	301, 360	" Clay ... ..	162, 177
" Persons employed ... ..	300, 359	" Coal ... ..	162, 181, 184
Alsace Lorraine, Use of Safety Catches ... ..	85	" Igneous rocks ... ..	162, 215
Alum, Output of :		" Iron ore ... ..	162, 218, 220, 222
German Empire... ..	404	" Limestone ... ..	163, 253
Prussia ... ..	412	" Salt ... ..	159, 264
Sweden ... ..	452	" Sandstone ... ..	163, 268
Alum clay ( <i>see</i> Bauxite) ... ..	172	" Persons employed ... ..	58, 60, 63, 67, 163
Aluminium, Makers in United Kingdom ... ..	173	Apatite, Output of Norway ... ..	433
" Output of United States ... ..	463	" " Sweden ... ..	452
" phosphate ... ..	448	Appeals ... ..	116
" sulphate, Output of German Empire ... ..	404	Arabia, Mining in ... ..	361
" " Prussia ... ..	412	Argentine Republic, Mineral output ... ..	361
Aluminous earths, Output of France ... ..	397	Argyll, Coal ... ..	160, 181, 184
" " Spain ... ..	448	" Igneous rocks ... ..	160, 215
" hematite, Production of Ireland ... ..	222	" Limestone ... ..	161, 253
Alum shale, Output of United Kingdom	10, 40, 139, 164, 306	" Sandstone ... ..	161, 267
" " Austria ... ..	365	" Slate ... ..	161, 271
" stone, Output of Italy ... ..	425	" Persons employed ... ..	57, 63, 66, 161
Alunite, Output of Australia ... ..	309	Arkansas, Accidents... ..	464
" " New South Wales ... ..	311	" Persons employed ... ..	461
Amethyst, Output of France ... ..	397	" Coal-cutting machines ... ..	459
Ammonite, Accidents with... ..	88, 106	Armagh Co., Igneous rocks... ..	162, 215
Amvis, Accidents with ... ..	88	" Limestone ... ..	163, 253
Anglesey, Copper precipitate ... ..	160, 200, 201	" Persons employed in Quarries ... ..	67, 163
" Gravel and sand ... ..	160, 212	Arsenic or Arsenic ore, Output of :	
" Igneous rocks ... ..	160, 214	United Kingdom ... ..	10, 40, 139, 167, 168, 306
" Lead ore ... ..	241, 243	Canada ... ..	328
" Limestone ... ..	161, 252	France ... ..	397
" Ochre ... ..	161, 256, 257	German Empire... ..	403
" Sandstone ... ..	161, 267	Japan ... ..	427
" Silver ... ..	241, 243	Ontario ... ..	331
" Zinc ore ... ..	161, 284, 285	Portugal ... ..	438
" Copper smelters ... ..	207	Prussia ... ..	411
" Persons employed ... ..	63, 66	Turkey ... ..	456
Anhalt, Use of Safety Catches ... ..	85	Arsenic refiners ... ..	168, 169
Ankylostomiasis, Outbreak in Cornwall ... ..	118	Arsenical pyrites, Output of :	
" " in Westphalian Collieries ... ..	415	United Kingdom ... ..	10, 40, 139, 166, 167, 306
Annam, Mineral output ... ..	421	Italy ... ..	425
Anthracite, Output of :		Saxony ... ..	416
United Kingdom ... ..	182	Spain ... ..	448
France ... ..	397	Arsenious oxide ... ..	462
Italy ... ..	425	Aruba, Mineral Output ... ..	393
Portugal ... ..	438	Asbestos, Output of :	
		Australia... ..	309

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## INDEX.

		Page
<b>A.</b>		
ABYSSINIA, Clay ... ..	160, 176	
" Gravel and sand ... ..	160, 212	
" Igneous rocks ... ..	160, 215	
" Limestone ... ..	161, 253	
" Sandstone ... ..	161, 267	
" Slate ... ..	161, 271	
" Persons employed ... ..	66, 161	
Abyssinia, Mineral Output ... ..	301, 359	
Accidents, Fatal, at Mines in the United Kingdom 7, 9, 67-99, 302, 303, 307		
" " Mines under the Coal Mines Act ... .. 9, 22, 23, 42		
" " Mines under the Metalliferous Mines Act ... .. 9, 24, 25, 43		
" " Quarries under the Quarries Act ... .. 9, 26, 27, 302, 303, 307		
" " in the several Coal-fields ... .. 94-97		
" " at Coal Mines ... .. 72		
" " Boiler explosions ... .. 92, 93		
" " Descent or ascent ... .. 22, 23, 79		
" " Explosions of Fire-damp or Coal-dust ... .. 22, 23, 73-76, 96		
" " Explosives ... .. 22-25, 87-89, 96		
" " Falls of ground 22-25, 42, 43, 73, 77, 78, 96		
" " Haulage ... .. 22-25, 87, 90, 91, 96		
" " in the several Inspection districts 22-25		
" " at Iron Mines ... .. 72		
" " Irruptions of water ... .. 22, 23, 28, 29, 96		
" " Miscellaneous underground 22-25, 42, 43, 73, 87-91, 96		
" " " on surface 22-25, 92, 94, 96		
" " Machinery ... .. 22-25, 87, 91, 92, 96		
" " at other Mines "than Coal and Iron 72		
" " Overwinding ... .. 22, 23, 79, 96		
" " Railways, sidings, &c. ... .. 22, 23, 92-94, 96		
" " Ropes and chains breaking 22, 23, 80-87, 96		
" " Shafts ... .. 22-25, 42, 43, 73, 78-87, 96		
" " Shot-firing ... .. 75		
" " Suffocation by natural gases ... .. 22, 23, 87, 89, 96		
" " Surface ... .. 22-25, 42, 43, 73, 91-94, 96		
" " Trams and tubs ... .. 22-25, 87, 96		
" " Underground fires 22, 23, 87, 89, 90, 96		
" " " haulage 22-25, 87, 96		
" " Deep Navigation Colliery ... .. 80		
" " Fallahill Colliery ... .. 89, 90		
" " Fochriw Colliery ... .. 76		
" " Garswood Hall Colliery ... .. 75, 76		
" " Hamstead Colliery ... .. 89, 90		
" " Hebburn Colliery ... .. 89, 90		
" " Maclaren Colliery ... .. 68, 75		
" " Milfraen Pit, Blaenavon Colliery ... .. 80		
" " Tirpentwys Colliery ... .. 79, 80		
" " Windsor Colliery ... .. 80		
" " at Mines in :		
" " Algeria ... .. 302, 361		
" " Australia ... .. 302, 310		
" " Austria ... .. 302, 367-370		
" " Belgium ... .. 302, 379		
" " Bohemia ... .. 371		
" " Bosnia and Herzegovina 302, 374		
Accidents, Fatal, at Mines in—cont.		
British Columbia... ..	302, 329, 330	
British Guiana ... ..	302, 324	
Bulgaria ... ..	302, 382	
Cape Colony ... ..	302, 334-336	
Ceylon ... ..	302, 338	
Federated Malay States... ..	302, 341	
France ... ..	302, 398	
German Empire ... ..	302, 406, 407	
Gold Coast ... ..	342	
Greece ... ..	418	
Holland ... ..	302, 420	
Hungary ... ..	302, 372	
India ... ..	302, 346, 347	
Italy ... ..	302, 425, 426	
Japan ... ..	302, 428	
Kimberley... ..	302, 334-336	
Mexico ... ..	302, 430	
Natal ... ..	302, 348	
Newfoundland ... ..	302, 349	
New South Wales ... ..	302, 312	
New Zealand ... ..	302, 351	
Nova Scotia ... ..	302, 331	
Ontario ... ..	302, 332	
Portugal ... ..	302, 438	
Prussia ... ..	412-414	
Quebec ... ..	320, 332	
Queensland ... ..	302, 315	
Russia ... ..	444	
Saxony ... ..	416	
Servia ... ..	302, 446	
Spain ... ..	302, 449	
Sweden ... ..	302, 452	
Switzerland ... ..	302, 455	
Tasmania ... ..	302, 317	
Transvaal ... ..	302, 335, 356	
United States ... ..	302, 464, 465	
Victoria ... ..	302, 319	
Western Australia ... ..	302, 320	
" " Fernie or Coal Creek Colliery, British Columbia ... ..	330	
" " Mount Kembla Colliery New South Wales ... ..	313	
" " Jupiter Colliery Austria ... ..	370	
" " Prussian Collieries ... ..	414	
" " San Andres Silver Mine, Mexico ... ..	431	
" " Fraterville Mine, Coal Creek (Tennessee) ... ..	465	
" " Rolling Mill Mine, Johnstown (Pennsylvania) ... ..	465	
" " at Quarries :		
" " in United Kingdom 7, 26, 27, 99-109		
" " from Blasting 26, 27, 102, 105-107		
" " from use of aerial inclines ... ..	108	
" " at different kinds of Quarries 101, 102		
" " during descent and ascent 26, 27, 103, 107		
" " Explosives... ..	26, 27, 105-107	
" " Falling from paths, steps, or ladders 26, 27, 103, 107		
" " " ledges 26, 27, 103, 107		
" " Falls of ground 26, 27, 102, 104, 105		
" " Inclined and engine planes 26, 27, 103, 107		
" " in the several Inspection districts 26, 27		
" " Machinery... ..	26, 27, 103, 107	
" " Miscellaneous, inside and outside 26, 27, 103, 107, 108		

	Page.		Page.
Borate of calcium, Output of Bolivia ... ..	380	Burnt cupreous pyrites treated at Metal Extraction Works ... ..	239
" " " Chili ... ..	384	" " Metals extracted from ... ..	239
Borax, Output of :		Bute, Gravel and sand ... ..	160, 212
Bolivia ... ..	380	" Igneous rocks ... ..	160, 215
Chili ... ..	384	" Sandstone ... ..	161, 267
Peru ... ..	435	" Persons employed ... ..	66, 161
United States ... ..	462		
Boric acid, Output of Italy ... ..	425		
Borneo (Dutch), Mineral output ... ..	390, 391		
" ( <i>see also</i> British North Borneo).			
Bosnia and Herzegovina, Accidents ... ..	302, 374		
" " Mineral output ... ..	301, 373, 374		
" " Persons employed ... ..	300, 373		
Brazil, Mineral output ... ..	301, 381		
Breconshire, Coal ... ..	160, 181, 182, 184		
" Gravel and sand ... ..	160, 212		
" Iron ore ... ..	160, 218, 219		
" Limestone ... ..	161, 252		
" Sandstone ... ..	161, 267		
" Slate ... ..	161, 271		
" Death rate from accidents ... ..	99		
" Persons employed ... ..	57, 63, 66, 99, 161		
Bridgewater Canals, Coal traffic ... ..	191		
Briquettes, Production of, in Hungary ... ..	372		
British Borneo, Output of Minerals ... ..	301, 322, 323		
British Central Africa Protectorate, Gold ... ..	323		
British Columbia, Accidents ... ..	302, 303, 329, 330		
" Mineral output ... ..	329		
" Persons employed ... ..	329		
" Special Commission appointed to enquire into causes of explosions in Coal Mines ... ..	330		
British Guiana, Accidents ... ..	302, 324		
" Mineral output ... ..	301, 324		
" Persons employed ... ..	300, 323		
British New Guinea, Mineral output ... ..	301, 325		
" " Persons employed ... ..	300, 325		
British Solomon Islands, Copper ... ..	325		
Broken Hill Lead Mines (New South Wales), Cases of lead poisoning ... ..	313		
Bromine, Production of the United States ... ..	462		
Brown coal or Lignite, Output of :			
United Kingdom ... ..	251		
Algeria ... ..	360		
Austria ... ..	365		
Bavaria ... ..	409		
Bosnia and Herzegovina ... ..	373		
Bulgaria ... ..	382		
France ... ..	397		
German Empire... ..	403, 405		
Greece ... ..	418		
Hungary... ..	372		
Italy ... ..	425		
New Zealand ... ..	351		
Portugal ... ..	438		
Prussia ... ..	411		
Roumania ... ..	440		
Russia ... ..	443		
Saxony ... ..	415		
Servia ... ..	446		
Spain ... ..	448		
Victoria ... ..	318		
Brown iron ore, Output of :			
United Kingdom ... ..	221		
United States ... ..	464		
Brunswick, Use of Safety Catches ... ..	85		
Buckinghamshire, Chalk ... ..	158, 174		
" Clay ... ..	158, 176		
" Gravel and sand ... ..	158, 212		
" Limestone ... ..	159, 252		
" Persons employed ... ..	65, 159		
Bulgaria, Accidents ... ..	302, 382		
" Mineral output ... ..	301, 382		
" Persons employed ... ..	300, 382		
Bulldog, 'Special', powder, Accidents with ... ..	88		



	Page.		Page.
Coal, Output of— <i>cont.</i>		Copper imported ... ..	206, 207
Tasmania ... ..	317	" obtained from British ores ... ..	139, 200, 201
Tong-King ... ..	421	" " " Foreign ores ... ..	207
Transvaal ... ..	301, 355	" Price in the London market ... ..	202, 203
Turkey ... ..	301, 457	" Smelters in United Kingdom ... ..	207, 208
United States ... ..	301, 462	Copper or Copper ore, Output of :	
Victoria ... ..	318	United Kingdom 10, 40, 139, 200-202, 301, 306, 307	
Western Australia ... ..	320	Algeria ... ..	301, 360
West Virginia ... ..	463	Argentine Republic ... ..	301, 361
" Output per person employed ... 7, 14, 15, 182, 183		Australia ... ..	301, 309
" exported from United Kingdom ... ..185, 197-199		Austria ... ..	301, 365
" imported into " " ... .. 196		Bolivia ... ..	301, 380
" Average price in the several Coal-fields ... .. 183		Bosnia and Herzegovina ... ..	301, 373
" " " in the several Counties ...180, 181, 184		British Columbia ... ..	329
" Average Price in the London market ... .. 186, 187		Canada ... ..	301, 328
" " " at the Pit's mouth ... 180, 181, 183, 184		Cape Colony ... ..	301, 334
" " " at the several Ports ... .. 187		Chili ... ..	301, 384
" Quantity retained for home consumption ... .. 185		France ... ..	301, 397
" " " per head of population... .. 185		German Empire .. ..	301, 403
" shipped coastwise ... .. 193-195, 199		Honduras ... ..	301, 421
" " for use of steamers ... .. 185, 199		Hungary ... ..	301, 372
" and coke conveyed by railway, canal, &c. ... 188-192		India ... ..	301, 344
" used in the blast furnaces of United Kingdom 227, 229-234		Italy ... ..	301, 425
Coal-cutting Machines :		Japan ... ..	301, 427
Number in use in the United Kingdom ... 114, 115		Mexico ... ..	301, 430
" " " United States ... .. 459		New Caledonia ... ..	301, 432
Quantity of Coal obtained in United Kingdom by use of ... .. 114, 115		Newfoundland ... ..	301, 349
Quantity of Coal obtained in United States by use of 458		New South Wales ... ..	311
Coal-dust ( <i>see</i> Accidents).		New Zealand ... ..	301, 351
Coal Creek Colliery Explosion, British Columbia ... 330		Norway ... ..	301, 433
Coal-fields of United Kingdom, List of ... .. 54		Ontario ... ..	331
" Fatal accidents ... .. 94-97		Persia ... ..	301, 434
" Mineral output ... .. 182, 183		Peru ... ..	301, 435
" Persons employed ... .. 55, 56, 183		Portugal ... ..	301, 438
Coal miners' strike in United States ... .. 466		Prussia ... ..	411
Coal mines, definition ... .. 53		Quebec ... ..	332
" Fatal accidents ... .. 72		Queensland ... ..	314
" Mineral output from ... .. 182-184		Russia ... ..	301, 444
" Persons employed at ... 54, 55, 57, 58, 183, 184		Servia ... ..	301, 446
" Regulation Act ... .. 5		South Australia... ..	316
Cobalt and Nickel ores, Output of :		Spain ... ..	301, 448
United Kingdom ... .. 41, 199		Sweden ... ..	301, 452
Australia ... .. 309		Tasmania ... ..	317
Bolivia ... .. 380		Turkey ... ..	301, 457
Chili ... .. 384		United States ... ..	301, 463
German Empire... .. 403		Western Australia ... ..	320
New Caledonia ... .. 432		Copper precipitate, Production of :	
New South Wales ... .. 311		United Kingdom ... .. 10, 40, 139, 200-202, 306	
Prussia ... .. 411		Bolivia ... ..	380
Russia ... .. 444		Chili ... ..	384
Saxony ... .. 415		Portugal ... ..	438
United States ... .. 462		Coprolites ( <i>see</i> Phosphate of lime) ... .. 260	
Western Australia ... .. 320		" conveyed by railway ... .. 261	
Cochin China, Output of jet ... .. 421		Coral, Production of Ceylon ... .. 337	
Coke exported from United Kingdom ... .. 185, 197-199		Corea, Mineral wealth of ... .. 388	
" shipped coastwise ... .. 193-195, 199		" Output of Gold ... .. 301, 388	
" Output of :		" Persons employed ... .. 300, 388	
Australia ... .. 309		Cork, Bandon and South Coast Railway coal and coke traffic ... .. 190	
British Columbia ... .. 329		Cork Co., Barytes ... .. 162, 170, 171	
Canada ... .. 328		" Clay ... .. 162, 177	
New South Wales ... .. 311		" Coal ... .. 162, 181, 184	
Nova Scotia ... .. 330		" Gravel and sand ... .. 162, 213	
Colombia, Mineral output ... .. 301, 387		" Limestone ... .. 163, 253	
Colorado, Accidents ... .. 464		" Sandstone... .. 163, 268	
" Persons employed ... .. 461		" Slate ... .. 163, 271	
" Coal cutting machines ... .. 459		" Persons employed ... .. 58, 63, 67, 163	
Commonwealth of Australia ( <i>see</i> Australia).		Cornwall, Arsenic ... .. 159, 167	
Comparative tables, 1873-1902, Persons employed, Mineral output, Deaths from Accidents and Death Rates ... .. 38-44		" Arsenical pyrites ... .. 159, 166	
Congo Free State ... .. 388		" Chert and flint ... .. 153, 175	
Copper exported ... .. 203-205		" China clay and stone ... .. 176	
" extracted from Burnt Cupreous pyrites 207, 239		" Clay ... .. 158, 176	
		" Copper ore ... .. 158, 200, 201	
		" Gravel and sand ... .. 158, 212	
		" Igneous rocks ... .. 153, 214	
		" Limestone ... .. 159, 252	

	Page.		Page.
Coal, Output of— <i>cont.</i>		Copper imported ... ..	206, 207
Tasmania ... ..	317	" obtained from British ores ... ..	139, 200, 201
Tong-King ... ..	421	" " " Foreign ores ... ..	207
Transvaal ... ..	301, 355	" Price in the London market ... ..	202, 203
Turkey ... ..	301, 457	" Smelters in United Kingdom ... ..	207, 208
United States ... ..	301, 462	Copper or Copper ore, Output of :	
Victoria ... ..	318	United Kingdom 10, 40, 139, 200-202, 301, 306, 307	
Western Australia ... ..	320	Algeria ... ..	301, 360
West Virginia ... ..	463	Argentine Republic ... ..	301, 361
" Output per person employed ... 7, 14, 15, 182, 183		Australia ... ..	301, 309
" exported from United Kingdom ... ..185, 197-199		Austria ... ..	301, 365
" imported into " " ... ..	196	Bolivia ... ..	301, 380
" Average price in the several Coal-fields ... ..	183	Bosnia and Herzegovina ... ..	301, 373
" " " in the several Counties ...180, 181, 184		British Columbia ... ..	329
" Average Price in the London market ... ..	186, 187	Canada ... ..	301, 328
" " " at the Pit's mouth ... 180, 181, 183, 184		Cape Colony ... ..	301, 334
" " " at the several Ports ... ..	187	Chili ... ..	301, 384
" Quantity retained for home consumption ... ..	185	France ... ..	301, 397
" " " per head of population... ..	185	German Empire .. ..	301, 403
" shipped coastwise ... ..	193-195, 199	Honduras ... ..	301, 421
" " for use of steamers ... ..	185, 199	Hungary ... ..	301, 372
" and coke conveyed by railway, canal, &c. ... ..	188-192	India ... ..	301, 344
" used in the blast furnaces of United Kingdom 227, 229-234		Italy ... ..	301, 425
Coal-cutting Machines :		Japan ... ..	301, 427
Number in use in the United Kingdom ... ..	114, 115	Mexico ... ..	301, 430
" " " United States ... ..	459	New Caledonia ... ..	301, 432
Quantity of Coal obtained in United Kingdom by use of ... ..	114, 115	Newfoundland ... ..	301, 349
Quantity of Coal obtained in United States by use of ... ..	458	New South Wales ... ..	311
Coal-dust ( <i>see</i> Accidents).		New Zealand ... ..	301, 351
Coal Creek Colliery Explosion, British Columbia ... ..	330	Norway ... ..	301, 433
Coal-fields of United Kingdom, List of ... ..	54	Ontario ... ..	331
" Fatal accidents ... ..	94-97	Persia ... ..	301, 434
" Mineral output ... ..	182, 183	Peru ... ..	301, 435
" Persons employed ... ..	55, 56, 183	Portugal ... ..	301, 438
Coal miners' strike in United States ... ..	466	Prussia ... ..	411
Coal mines, definition ... ..	53	Quebec ... ..	332
" Fatal accidents ... ..	72	Queensland ... ..	314
" Mineral output from ... ..	182-184	Russia ... ..	301, 444
" Persons employed at ... ..	54, 55, 57, 58, 183, 184	Serbia ... ..	301, 446
" Regulation Act ... ..	5	South Australia... ..	316
Cobalt and Nickel ores, Output of :		Spain ... ..	301, 448
United Kingdom ... ..	41, 199	Sweden ... ..	301, 452
Australia ... ..	309	Tasmania ... ..	317
Bolivia ... ..	380	Turkey ... ..	301, 457
Chili ... ..	384	United States ... ..	301, 463
German Empire... ..	403	Western Australia ... ..	320
New Caledonia ... ..	432	Copper precipitate, Production of :	
New South Wales ... ..	311	United Kingdom ... ..	10, 40, 139, 200-202, 306
Prussia ... ..	411	Bolivia ... ..	380
Russia ... ..	444	Chili ... ..	384
Saxony ... ..	415	Portugal ... ..	438
United States ... ..	462	Coprolites ( <i>see</i> Phosphate of lime) ... ..	260
Western Australia ... ..	320	" conveyed by railway ... ..	261
Cochin China, Output of jet ... ..	421	Coral, Production of Ceylon ... ..	337
Coke exported from United Kingdom ... ..	185, 197-199	Correa, Mineral wealth of ... ..	388
" shipped coastwise ... ..	193-195, 199	" Output of Gold ... ..	301, 388
" Output of :		" Persons employed ... ..	300, 388
Australia ... ..	309	Cork, Bandon and South Coast Railway coal and coke traffic ... ..	190
British Columbia ... ..	329	Cork Co., Barytes ... ..	162, 170, 171
Canada ... ..	328	" Clay ... ..	162, 177
New South Wales ... ..	311	" Coal ... ..	162, 181, 184
Nova Scotia ... ..	330	" Gravel and sand ... ..	162, 213
Colombia, Mineral output ... ..	301, 387	" Limestone ... ..	163, 253
Colorado, Accidents ... ..	464	" Sandstone ... ..	163, 268
" Persons employed ... ..	461	" Slate ... ..	163, 271
" Coal cutting machines ... ..	459	" Persons employed ... ..	58, 63, 67, 163
Commonwealth of Australia ( <i>see</i> Australia).		Cornwall, Arsenic ... ..	159, 167
Comparative tables, 1873-1902, Persons employed, Mineral output, Deaths from Accidents and Death Rates ... ..	38-44	" Arsenical pyrites ... ..	159, 166
Congo Free State ... ..	388	" Chert and flint ... ..	133, 175
Copper exported ... ..	203-205	" China clay and stone ... ..	176
" extracted from Burnt Cupreous pyrites ... ..	207, 239	" Clay ... ..	158, 176
		" Copper ore ... ..	158, 200, 201
		" Gravel and sand ... ..	158, 212
		" Igneous rocks ... ..	159, 214
		" Limestone ... ..	159, 252



	Page.
Cornwall, Mica ... ..	159, 255
" Ochre ... ..	159, 256, 257
" Sandstone ... ..	159, 267
" Slate ... ..	159, 271, 272
" Tin ore ... ..	159, 276-278
" Uranium ore ... ..	159, 282
" Wolfram ... ..	159, 283
" Arsenic refiners ... ..	168
" Death-rate from accidents ... ..	98
" Tin smelters ... ..	282
" Persons employed ... ..	62, 65, 98, 159
Corundum, Output of :	
Canada ... ..	328
Ontario ... ..	331
United States ... ..	462
Costa Rica, Output of Gold ... ..	301, 388
County summaries, Output of Mines under the Coal Mines Act ... ..	142-145
" Output of Mines under the Metalliferous Mines Act ... ..	146-149
" Output of Quarries ... ..	150-155
" Output of Shallow workings, Brine wells, &c. ... ..	156, 157
" Output of all Mines, Quarries, &c. ... ..	158-163
" Persons employed in Coal Mines ... ..	57, 58
" " Iron Mines ... ..	59, 60
" " Other Mines ... ..	62, 63
" Persons employed under the Coal Mines Act ... ..	143, 145
" employed under the Metalliferous Mines Act ... ..	147, 149
" employed under the Quarries Act ... ..	65-67, 151, 153, 155
" employed under all three Acts ... ..	159, 161, 163
" Death-rates ... ..	98, 99
Crinan Canal coal and coke traffic ... ..	192
Crocidolite, Production of Cape Colony ... ..	334
Cryolite, Output of Greenland ... ..	389
Cuba, Mineral wealth ... ..	388
Cumberland, Clay ... ..	158, 176
Coal ... ..	158, 180, 184
Gravel and sand ... ..	158, 212
Gypsum ... ..	158, 213
Igneous rocks ... ..	158, 214
Iron ore ... ..	158, 218-221
Lead ore ... ..	159, 241, 242
Limestone ... ..	159, 252
Sandstone ... ..	159, 267
Silver ... ..	241, 242
Slate ... ..	159, 271, 272
Zinc ore ... ..	159, 284, 285
Blast furnaces ... ..	227, 229
Coal conveyed by rail ... ..	188, 189
Death-rate from accidents ... ..	98
Persons employed ... ..	57, 59, 62, 65, 98, 159
Cupreous iron pyrites, Output of :	
Canada ... ..	328
Italy ... ..	425
Norway ... ..	433
Portugal ... ..	438
Saxony ... ..	416
Spain ... ..	448
Cupreous iron pyrites, imported ... ..	238, 239
" treated at the Metal Extraction Works ... ..	239
Curaçao, Minerals worked ... ..	893
Cyprus, Mineral output ... ..	301, 339

## D.

	Page.
DEATHS from Accidents at Mines in United Kingdom ... ..	7, 9, 23, 25, 42, 43, 67-99
" at Quarries in United Kingdom ... ..	7, 9, 27
" (see also under "Accidents").	
Death-rates in each inspection-district ... ..	34
" in the several Coal-fields ... ..	94, 95, 97
" in the principal Mining Counties ... ..	98, 99
" in all Mines per 1000 persons employed from 1893-1902 ... ..	69
" " " 1873-1902 ... ..	70
" " " 1851-1902 ... ..	120, 121
" per million tons of mineral raised ... ..	44, 70
" Mines under the Coal Mines Act ... ..	8, 34, 44
" Metalliferous Mines Act ... ..	8, 34, 45
" of persons under and above 16 years of age ... ..	116-118
" Quarries under the Quarries Act ... ..	8, 34, 100
" in different kinds of Quarries ... ..	101
" from accidents at Mines :	
United Kingdom ... ..	8, 54, 69, 70, 303, 307
Algeria ... ..	303, 361
Austria ... ..	303, 367, 368
Belgium ... ..	303, 379
Bohemia ... ..	371
Bosnia and Herzegovina ... ..	303, 374
British Columbia ... ..	303, 330
British Guiana ... ..	303, 324
Bulgaria ... ..	303, 382
Cape Colony ... ..	303, 334
Ceylon ... ..	303, 338
Federated Malay States ... ..	303, 341
France ... ..	303, 398, 399
German Empire ... ..	303, 406, 407
Gold Coast ... ..	342
Greece ... ..	418
Holland ... ..	303, 420
Hungary ... ..	303, 372
India ... ..	303, 346, 347
Italy ... ..	303, 425
Japan ... ..	303, 428
Kimberley ... ..	303, 334, 335
Mexico ... ..	303, 430
Natal ... ..	303, 348
Newfoundland ... ..	303, 349
New South Wales ... ..	303, 312
New Zealand ... ..	303, 351
Nova Scotia ... ..	303, 331
Ontario ... ..	303, 332
Portugal ... ..	303, 438
Prussia ... ..	413
Quebec ... ..	303, 33
Queensland ... ..	303, 315
Russia ... ..	414
Saxony ... ..	416
Servia ... ..	303, 446
Spain ... ..	303, 449
Sweden ... ..	303, 452
Switzerland ... ..	303, 455
Tasmania ... ..	303, 317
Transvaal ... ..	303, 355
United States ... ..	303, 464, 465
Victoria ... ..	303, 319
Western Australia ... ..	303, 320
" from accidents at Petroleum Wells :	
Austria ... ..	367
" from accidents at Quarries :	
United Kingdom ... ..	8, 34, 100, 303, 307
Algeria ... ..	303, 361
Belgium ... ..	303, 379

	Page.
Fireclay, Output of :	
United Kingdom ... ..	15
Coalfields... ..	182
Australia... ..	309
Bavaria ... ..	409
Canada ... ..	328
Cape Colony ... ..	334
France ... ..	397
New South Wales ... ..	311
Sweden ... ..	452
Fires underground in Mines, Accidents	22, 23, 28, 29, 75, 87, 89, 90
Fire-damp or coal-dust, Accidents from	22, 23, 28, 29, 73-76
Flags, Output of :	
Algeria ... ..	360
Belgium ... ..	378
Canada ... ..	328
France ... ..	397
Quebec ... ..	332
Tunis ... ..	456
Flint and chert, Output of :	
United Kingdom ... ..	10, 40, 139, 175
Belgium ... ..	378
France ... ..	398
United States ... ..	462
Flintshire, Chert and flint ... ..	160, 175
" Clay ... ..	160, 176
" Coal ... ..	160, 181, 184
" Gravel and sand ... ..	160, 212
" Iron ore ... ..	160, 218, 220, 222
" Lead ore ... ..	161, 241, 244
" Limestone ... ..	161, 252
" Oil shale ... ..	161, 258
" Sandstone ... ..	161, 267
" Silver ... ..	241, 244
" Zinc ore ... ..	161, 284, 286
" Blast furnaces ... ..	227, 233
" Death-rate from Accidents ... ..	98
" Lead smelters ... ..	250
" Persons employed ... ..	57, 60, 63, 66, 98, 161
Fluorspar, Output of :	
United Kingdom ... ..	10, 40, 139, 209, 210, 306
Bavaria ... ..	409
France ... ..	397
Saxony ... ..	416
Spain ... ..	448
United States ... ..	462
Fochriw Colliery Explosion ... ..	76
Forfar, Clay ... ..	160, 176
" Igneous rocks ... ..	160, 215
" Sandstone ... ..	161, 268
" Persons employed ... ..	66, 161
Formosa, Mineral wealth ... ..	301, 394
Forth and Clyde Canal, Coal and Coke traffic ... ..	192
Fossil fuel, Production of Italy ... ..	425
France, Accidents ... ..	302, 398, 399
" Mineral output ... ..	301, 397, 398
" Persons employed ... ..	300, 396
" Use of Safety Catches ... ..	82, 83
French Guiana, Mineral output ... ..	301, 400
French Soudan, Mineral output ... ..	301, 400
Fuller's earth, Output of :	
United Kingdom ( <i>see</i> Clay) ... ..	176
France ... ..	397
United States ... ..	462
Furnaces, Blast, in United Kingdom, particulars of	229-234
Furness Railway, Coal and coke carried by ... ..	188

## G

	Page.
GALENA ( <i>see</i> Lead ore) ... ..	240-245
Galway Co., Igneous rocks ... ..	162, 215
" Limestone ... ..	163, 253
" Sandstone ... ..	163, 268
" Persons employed ... ..	67, 163
Ganister ( <i>see</i> Sandstone) ... ..	267, 268
Garnet, Output of German East Africa ... ..	400
" United States ... ..	463
Garswood Hall Colliery Explosion ... ..	75, 76
Gas, Carburetted hydrogen, Output of Italy ... ..	425
Gelatine-dynamite, Accidents with ... ..	88, 106
Gelignite, Accidents with ... ..	88, 106
General remarks :	
Ankylostomiasis ... ..	118
Appeals ... ..	116
Coal cutting machinery ... ..	114, 115
Employment of boys at mines ... ..	116-118
Explosives in Coal Mines Order ... ..	114
Legislation ... ..	118, 119
Notification of Accidents ... ..	119
General Summary of the Mineral Output of :	
United Kingdom for 1901 and 1902 ... ..	10, 139
British Empire " " ... ..	301, 306, 307
Foreign countries " " ... ..	301
German East Africa, Mineral deposits ... ..	400
German South-West Africa, Minerals found in ... ..	417
German Empire, Accidents... ..	302, 406-408
" " Mineral output ... ..	301, 403-406
" " Persons employed ... ..	300, 402, 403
" " Use of Safety Catches ... ..	83-85
Glamorganshire, Clay ... ..	160, 176
" Coal ... ..	160, 181, 182, 184
" Iron ore ... ..	160, 218, 219, 223
" Limestone ... ..	161, 252
" Sandstone ... ..	161, 267
" Arsenic refiners ... ..	169
" Blast furnaces ... ..	227, 233
" Copper smelters ... ..	208
" Death-rate from Accidents ... ..	98
" Lead smelters ... ..	250
" Persons employed ... ..	57, 63, 66, 98, 161
" Tin smelters ... ..	282
" Zinc smelters ... ..	283
Glasgow and South Western Railway, Coal carried ... ..	190
Gloucester and Berkeley Canal Coal traffic ... ..	192
Gloucestershire, Clay ... ..	158, 176
" Coal ... ..	158, 180, 184
" Gravel and sand ... ..	158, 212
" Iron ore ... ..	158, 218, 220, 221
" Limestone ... ..	159, 253
" Ochre ... ..	159, 256, 257
" Sandstone ... ..	159, 267
" Strontium sulphate ... ..	159, 275
" Coal conveyed by rail ... ..	188, 189
" Death-rate from Accidents ... ..	98
" Lead smelters ... ..	250
" Persons employed ... ..	57, 59, 62, 65, 98, 159
" Zinc smelters ... ..	289
Gold bullion and specie exported and imported ... ..	211
" extracted from foreign cupreous pyrites ... ..	211, 239
" ore, Imported ... ..	211
Gold or Gold quartz, Output of :	
United Kingdom ... ..	10, 40, 139, 210, 211, 301, 306, 307
Abyssinia ... ..	301, 359
Argentine Republic ... ..	301, 361
Australia ... ..	301, 309
Austria ... ..	301, 365
Bolivia ... ..	301, 380
Brazil ... ..	301, 381

	Page.		Page.
<b>Gold or Gold quartz, Output of—cont.</b>		<b>Graphite, Output of :</b>	
British Borneo ... ..	301, 323	Australia... ..	309
British Columbia ... ..	329	Austria ... ..	365
British Guiana ... ..	301, 324	Bavaria ... ..	409
British New Guinea ... ..	301, 325	Canada ... ..	328
Canada ... ..	301, 328	Ceylon ... ..	337
Cape Colony ... ..	301, 334	France ... ..	397
Chili ... ..	301, 385	German Empire... ..	403
China ... ..	301, 387	India ... ..	344
Colombia... ..	301, 387	Italy ... ..	425
Corea ... ..	301, 388	Japan ... ..	427
Costa Rica ... ..	301, 388	Mexico ... ..	430
Dutch Borneo ... ..	391	Ontario ... ..	331
Dutch East Indies ... ..	301, 391, 392	Quebec ... ..	332
Dutch Guiana ... ..	301, 392	Spain ... ..	448
Dutch West Indies ... ..	301, 393	Sweden ... ..	452
Ecuador ... ..	301, 393	United States ... ..	462
Federated Malay States ... ..	301, 340	Western Australia ... ..	320
Formosa ... ..	394	<b>Gravel and sand, Output of :</b>	
France ... ..	301, 397	United Kingdom ... ..	10, 40, 139, 212, 213, 306
French Guiana ... ..	301, 400	Algeria ... ..	360
French Soudan ... ..	301, 400	Belgium ... ..	378
German Empire... ..	301, 404, 406	Canada ... ..	328
Gold Coast ... ..	301, 342	Ceylon ... ..	337
Honduras ... ..	301, 421	France ... ..	398
Hungary... ..	301, 372	Great Central Railway, Coal and Coke carried ... ..	188
India ... ..	301, 344	Great Eastern Railway, Coprolites conveyed ... ..	261
Italy ... ..	301, 425	Great Northern Railway, Coal carried ... ..	188
Ivory Coast ... ..	301, 426	" " " Coprolites conveyed ... ..	261
Japan ... ..	301, 427	" " " Salt conveyed ... ..	266
Madagascar ... ..	301, 429	" " " of Ireland, Coal and Coke	
Mexico ... ..	301, 430	carried ... ..	190
Natal ... ..	301, 348	Great Southern and Western Railway, Coal and Coke	
New South Wales ... ..	311	traffic ... ..	190
New Zealand ... ..	301, 351	Great Western Railway, Coal and Coke carried... ..	188
Nicaragua ... ..	301, 432	Greece, Accidents ... ..	418
Norway ... ..	301, 433	" Mineral output ... ..	301, 418
Nova Scotia ... ..	330	" Persons employed ... ..	300, 417
Ontario ... ..	331	Greenland, Output of Cryolite ... ..	389
Peru ... ..	301, 435	" Persons employed ... ..	300, 389
Portugal ... ..	301, 438	<b>Grindstones, Output of :</b>	
Portuguese East Africa ... ..	439	Canada ... ..	328
Prussia ... ..	411	Nova Scotia ... ..	330
Quebec ... ..	332	United States ... ..	462
Queensland ... ..	314	<b>Guano, Output of :</b>	
Rhodesia ... ..	301, 353	Chili ... ..	385
Russia ... ..	301, 444	Guatemala, Mineral deposits ... ..	419
Sarawak ... ..	323	Gum, Kauri, Production of New Zealand ... ..	351
Senegal ... ..	445	Gun-flints, Production of United Kingdom ... ..	175
Servia ... ..	301, 446	Gunpowder, Accidents with ... ..	88, 106
South Australia... ..	316	<b>Gypsum, Output of</b>	
Spain ... ..	448	United Kingdom ... ..	10, 40, 139, 213, 214, 306
Sumatra... ..	392	Algeria ... ..	360
Tasmania ... ..	317	Australia... ..	309
Transvaal ... ..	301, 355	Bavaria ... ..	410
United States ... ..	301, 463	Canada ... ..	328
Uruguay ... ..	301, 466	Cyprus ... ..	339
Venezuela ... ..	301, 467	France ... ..	398
Victoria ... ..	318	Greece ... ..	418
Western Australia ... ..	320	Mexico ... ..	430
<b>Gold Coast, Accidents</b>		Nova Scotia ... ..	330
" Quantity of Gold exported ... ..	301, 342	Ontario ... ..	331
" Persons employed ... ..	300, 341	Switzerland ... ..	454
Grand Canal, Coal traffic ... ..	192	United States ... ..	462
<b>Granite, Output of :</b>		Victoria ... ..	318
United Kingdom (included with Igneous rocks) 214, 215		<b>H.</b>	
Australia .. ..	309	HADDINGTON, Clay ... ..	160, 176
Bavaria ... ..	409	" Coal ... ..	160, 181, 184
British Guiana ... ..	324	" Gravel and sand ... ..	160, 212
Canada ... ..	328		
Ceylon ... ..	337		
Newfoundland ... ..	349		
Quebec ... ..	332		
Queensland ... ..	314		



	Page.
Haddington, Igneous rocks...	160, 215
" Limestone ...	161, 253
" Sandstone ...	161, 268
" Persons employed ...	57, 66, 161
Haldane, Dr. J. S., Inquiry into outbreak of Ankylos- tomyiasis at Dolcoath Mine ...	118
Hall, H., Remarks on narrow haulage roads ...	91
Hampshire, Chalk ...	158, 174
" Chert and flint ...	158, 175
" Clay ...	158, 176
" Gravel and sand ...	158, 212
" Sandstone ...	159, 267
" Persons employed ...	65, 159
Hamstead Colliery, Underground fire at ...	89, 90
Haulage, Underground Accidents 22-25, 28-31, 87, 90, 91	
Haulage roads, Suggestions for improving ...	91
Hayti, Mineral deposits ...	419
Hepburn Colliery, Underground fire at ...	89, 90
Hematite iron, Production of the blast furnaces ...	228
Herefordshire, Clay ...	158, 176
" Gravel and sand ...	158, 212
" Limestone ...	159, 252
" Sandstone ...	159, 267
" Persons employed ...	65, 159
" Coal conveyed by rail ...	189
Hertfordshire, Chalk ...	158, 174
" Chert and flint ...	158, 175
" Clay ...	158, 176
" Gravel and sand ...	158, 212
" Persons employed ...	62, 65, 159
Hesse, Use of Safety Catches ...	85
Holland, Accidents ...	302, 420
" Mineral output ...	301, 420
" Persons employed ...	300, 419
Honduras, Mineral output ...	301, 421
Honestones, Production of Belgium ...	378
Hull and Barnsley Railway, Coal and coke carried ...	188
Hungary, Accidents ...	302, 372
" Mineral output ...	301, 372
" Persons employed ...	300, 371
Huntingdonshire, Clay ...	158, 176
" Persons employed ...	65, 159

## I.

ICELAND, Minerals ...	389
Igneous rocks, Output of United Kingdom 10, 40, 139, 214, 215, 306	
" Quarries, Accidents ...	101, 102
" Persons employed ...	64
Illinois, Accidents in Coal Mines ...	464
" Output of Coal ...	460, 463
" Persons employed ...	461
" Coal-cutting machines ...	459
Imports of Coal ...	196
" Copper and copper ore ...	206, 207
" Gold and gold ore ...	211
" Iron ore ...	224-226
" Iron pyrites ...	238, 239
" Lead and lead ore ...	248, 249
" Manganese ore ...	255
" Petroleum ...	260
" Phosphate of lime ...	261
" Quicksilver ...	262
" Silver bullion and specie ...	269
" Silver ore ...	269
" Tin and tin ore ...	280
" Zinc and zinc ore ...	287
Inclined and engine planes, Accidents 32, 33, 103, 107, 108	

	Page.
India, Accidents ...	302, 346, 347
" Mineral output ...	301, 344, 345
" Persons employed ...	300, 343
" Legislation ...	347
Indo-China, Mineral output ...	301, 421
Indiana, Accidents in Coal Mines...	464
" Persons employed ...	461
" Coal-cutting machines ...	459
Indian Territory, Accidents in Coal Mines ...	464
" Persons employed ...	461
" Coal-cutting machines ...	459
Infusorial earth, Output of Australia ...	309
" " United States ...	462
" " Victoria ...	318
Inspection districts for Mines and Quarries ...	46, 47
Inspectors of Mines, List of ...	46, 47
Inverness, Gravel and sand...	160, 212
" Igneous rocks ...	160, 215
" Limestone ...	161, 253
" Sandstone ...	161, 268
" Persons employed ...	66, 161
Iodine, Production of Chili ...	385
" " Java (Dutch East Indies) ...	391
Iowa, Accidents in Coal Mines ...	464
" Persons employed ...	461
" Coal-cutting machines ...	459
Ireland, Summary of Mineral output ...	141
(See also under each County.)	
" Lead smelters ...	251
Irish Coal-fields, Counties ...	54
" Fatal accidents ...	94-97
" Output of Mineral ...	182, 183
" Persons employed ...	55, 56, 183
Iron or Iron ore, Output of :	
United Kingdom 10, 41, 139, 216-223, 226, 301, 306, 307	
Alabama ...	464
Algeria...	301, 360
Australia ...	301, 309
Austria...	301, 365
Bavaria ...	410
Belgium ...	301, 378
Bosnia and Herzegovina ...	301, 374
Canada...	301, 328
Chili ...	301, 385
Cuba ...	301, 388
France ...	301, 397
German Empire ...	301, 403, 408
Greece ...	301, 418
Hungary ...	301, 372
India ...	301, 344
Italy ...	301, 425
Japan ...	301, 427
Luxemburg ...	301, 404
Michigan ...	464
Minnesota ...	464
Newfoundland ...	301, 349
New South Wales ...	311
New Zealand ...	351
Norway ...	301, 433
Nova Scotia ...	330
Ontario ...	331
Portugal ...	301, 438
Prussia ...	411
Quebec...	332
Queensland ...	314
Russia ...	301, 444
Saxony ...	416
South Australia ...	316
Spain ...	301, 448
Sweden ...	301, 452
Tasmania ...	317
United States...	301, 463 464
Western Australia ...	320

	Page.
Iron ore, Exported ... ..	225, 226
" Imported ... ..	224-226
" Diagram showing output and import, 1873-1902 ... ..	217
" Fatal Accidents at Iron Mines ... ..	72
" Output from Coal Mines ... ..	217, 218
" " Mines under the Coal Mines Act 10, 14, 15, 219	
" " " Metalliferous Mines Act 10, 16, 17, 220-222	
" " Iron Mines ... ..	217, 218
" " Quarries ... 10, 18, 19, 216-218, 223	
" " Open workings ... ..	20, 21, 223
" " in each County ... ..	158, 160, 162, 218
" " from the several Coal-fields ... ..	182
" Persons employed at Iron Mines ... ..	54, 58-60
" Quantity available for the blast furnaces ... ..	226
" " smelted in United Kingdom 227, 229-234	
" Quarries, Accidents ... ..	101, 103
" " Persons employed ... ..	64
" Micaceous ... ..	257
Iron oxide, Production of Australia ... ..	309
" " New South Wales ... ..	311
Iron, Pig, Exported ... ..	235-237
" " Prices per ton in different districts ... ..	235, 236
" " Output of the blast furnaces ... ..	227-235
" " Quantity available for home consumption ... ..	235
" " obtainable from British ores ... ..	139, 216
Iron pyrites, Imported ... ..	238
" Countries whence exported ... ..	239
" Output of :	
United Kingdom ... 10, 41, 139, 237, 238,	306
Bavaria ... ..	410
Belgium ... ..	378
Bosnia and Herzegovina ... ..	374
Canada ... ..	328
France ... ..	397
German Empire ... ..	403
Hungary ... ..	372
Italy ... ..	425
Japan ... ..	427
Newfoundland ... ..	349
Norway ... ..	433
Ontario ... ..	331
Portugal ... ..	438
Prussia ... ..	411
Russia ... ..	444
Saxony ... ..	416
Spain ... ..	449
United States ... ..	462
Iron vitriol, Production of :	
Austria ... ..	365
German Empire ... ..	404
Hungary ... ..	372
Japan ... ..	427
Prussia ... ..	411
Irruptions of water, Accidents ... ..	22, 23, 28, 29, 87, 90
Isle of Man, Clay ... ..	162, 177
" Gravel and sand ... ..	162, 213
" Igneous rocks ... ..	162, 215
" Lead ore ... ..	163, 241, 244
" Limestone ... ..	163, 253
" Sandstone ... ..	163, 268
" Silver ... ..	241, 244
" Slate ... ..	163, 271
" Zinc ore ... ..	163, 284, 286
" Summary of the Mineral output ... ..	141
" Persons employed ... ..	60, 63, 67, 163
Isle of Wight (included with Hampshire).	
Italy, Accidents ... ..	302, 425, 426
" Mineral output ... ..	301, 425
" Persons employed ... ..	300, 423, 424
Ivory Coast, Mineral wealth ... ..	426

## J.

	Page.
JAPAN, Accidents ... ..	302, 428
" Mineral output ... ..	301, 427
" Persons employed ... ..	300, 427
Java, Mineral output ... ..	391
Jet, Output of :	
United Kingdom ... ..	240
Cochin China ... ..	421
Spain ... ..	449
Johore, Mineral deposits ... ..	428

## K.

KAINITE, Output of :	
German Empire ... ..	403
Prussia ... ..	411
Kansas, Accidents at Coal Mines ... ..	464
" Persons employed ... ..	461
" Coal-cutting machines ... ..	459
Kauri gum, Production of New Zealand ... ..	351
Kent, Chalk ... ..	158, 174
" Chert and flint ... ..	158, 175
Kent, Clay ... ..	158, 176
" Gravel and sand ... ..	158, 212
" Limestone ... ..	159, 262
" Sandstone ... ..	159, 267
" Persons employed ... ..	57, 62, 65, 159
Kentucky, Accidents at Coal Mines ... ..	464
" Persons employed ... ..	461
" Coal-cutting machines ... ..	459
Kerry Co., Clay ... ..	162, 177
" Gravel and sand ... ..	162, 213
" Limestone ... ..	163, 253
" Persons employed ... ..	67, 163
Kildare Co., Clay ... ..	162, 177
" Gravel and sand ... ..	162, 213
" Limestone ... ..	163, 253
" Persons employed ... ..	67, 163
Kilkenny Co., Coal ... ..	162, 181, 182, 184
" Gravel and sand ... ..	162, 213
" Limestone ... ..	163, 253
" Sandstone ... ..	163, 268
" Slate ... ..	163, 271
" Persons employed ... ..	58, 67, 163
Kimberley Diamond Mines, Accidents at ... ..	335, 336
" " Persons employed at ... ..	334
Kincardine, Gravel and sand ... ..	160, 212
" Igneous rocks ... ..	160, 215
" Sandstone ... ..	161, 268
" Persons employed ... ..	66, 161
King's County, Bog ore ... ..	163
" Gravel and sand ... ..	162, 213
" Limestone ... ..	163, 253
" Sandstone ... ..	163, 268
" Persons employed ... ..	67, 163
Kinross, Clay ... ..	160, 176
" Coal ... ..	160, 181, 184
" Igneous rocks ... ..	160, 215
" Persons employed ... ..	57, 65, 161
Kirkcubright, Igneous rocks ... ..	160, 215
" Persons employed ... ..	66, 161
Kynite, Accidents with ... ..	88

# L.

	Page.
LABUAN, Output of coal ... ..	322
Lanarkshire, Clay ... ..	160, 176
" Coal ... ..	160, 181, 184
" Gravel and sand ... ..	160, 212
" Igneous rocks ... ..	160, 215
" Iron ore ... ..	160, 218, 219
" Lead ore ... ..	161, 241, 244
" Limestone ... ..	161, 253
" Oil shale ... ..	161, 258
" Sandstone ... ..	161, 268
" Silver ... ..	241, 244
" Blast furnaces ... ..	227, 234
" Coal conveyed by rail ... ..	189
" Death-rate from accidents... ..	98
" Persons employed ... ..	57, 63, 66, 98, 161
" Zinc smelters ... ..	289
Lancashire, Clay ... ..	158, 176
" Coal ... ..	158, 180, 184
" Gravel and sand ... ..	158, 212
" Igneous rocks ... ..	158, 214
" Iron ore ... ..	158, 218, 220, 222
" Iron pyrites ... ..	158, 237
" Limestone ... ..	159, 252
" Salt ... ..	159, 264
" Sandstone ... ..	159, 267
" Slate ... ..	159, 271, 272
" Blast furnaces ... ..	227, 230
" Coal conveyed by rail and canal ... ..	188, 189, 191
" Copper smelters ... ..	208
" Death-rate from accidents ... ..	98
" Lead smelters ... ..	250
" Persons employed ... ..	57, 59, 62, 65, 98, 159
" Zinc smelters ... ..	289
Lancashire and Cheshire Coal-fields, Counties ... ..	54
" " " Fatal Accidents ... ..	94-97
" " " Output of Mineral ... ..	182, 183
" " " Persons employed ... ..	55, 56, 183
Lancashire and Yorkshire Railway, Coal and Coke carried ... ..	188
Lead obtainable from British ores ... ..	139, 241-244
" " imported foreign ores ... ..	249
" Prices of, in the London market ... ..	245, 246
" Quantity available for home consumption ... ..	249
" Smelters in United Kingdom ... ..	250, 251
Lead and lead ore, Exported ... ..	246-249
" Imported ... ..	248, 249
" Output of :	
United Kingdom ... ..	10, 41, 139, 241-245, 301, 306, 307
Algeria ... ..	301, 360
Australia ... ..	301, 309
Austria ... ..	301, 365
Belgium ... ..	301, 378
Bolivia ... ..	301, 380
British Columbia ... ..	329
Canada ... ..	301, 328
Chili ... ..	301, 385
France ... ..	301, 397
German Empire ... ..	301, 403
Greece ... ..	301, 418
Hungary ... ..	301, 372
Italy ... ..	301, 425
Japan ... ..	301, 427
Mexico ... ..	301, 430
New South Wales ... ..	311
Peru ... ..	301, 435
Portugal ... ..	301, 438
Prussia ... ..	411

# Page-

## Lead and lead ore, Output of—cont.

Quebec ... ..	332
Queensland ... ..	31
Russia ... ..	301, 442
Servia ... ..	301, 445
Siam ... ..	301, 445
South Australia ... ..	316
Spain ... ..	301, 449
Sweden ... ..	301, 452
Tasmania ... ..	301, 317
Tunis ... ..	301, 456
United States ... ..	301, 463
Western Australia ... ..	301, 320
Lead poisoning cases at Broken Hill Mines (New South Wales) ... ..	313
Leeds and Liverpool Canal Co. Coal traffic ... ..	191
Leeward Islands ( <i>see</i> Redonda).	
Legislation relating to Mines in :	
United Kingdom ... ..	118, 119
India ... ..	347
Queensland ... ..	315
Western Australia ... ..	320
Leicestershire, Clay ... ..	158, 176
" Coal ... ..	158, 180, 184
" Gravel and sand ... ..	158, 212
" Igneous rocks ... ..	158, 214
" Iron ore ... ..	158, 218, 223
" Limestone ... ..	159, 252
" Slate ... ..	159, 271
" Blast furnaces ... ..	227, 230
" Coal conveyed by rail ... ..	188, 189
" Death-rate from Accidents ... ..	98
Leicestershire, Persons employed ... ..	57, 62, 65, 98, 159
Leitrim Co., Coal ... ..	162, 181, 184
" Sandstone ... ..	163, 268
" Persons employed ... ..	58, 67, 163
Liberia, Mineral wealth ... ..	428
Lignite ( <i>see</i> Brown coal).	
Limerick Co., Gravel and sand ... ..	162, 213
" Igneous rocks ... ..	162, 215
" Limestone ... ..	163, 253
" Sandstone ... ..	163, 268
" Persons employed ... ..	67, 163
Lime or limestone :	
Output of United Kingdom ... ..	10, 41, 139, 306
Algeria ... ..	360
Australia... ..	309
Bavaria ... ..	410
Belgium ... ..	378
Canada ... ..	328
Chili ... ..	385
France ... ..	397, 398
Malta ... ..	347
Newfoundland ... ..	349
New South Wales ... ..	311
Nova Scotia ... ..	330
Ontario ... ..	331
Queensland ... ..	314
Saxony ... ..	416
Switzerland ... ..	454
Tunis ... ..	456
United States ... ..	462
Western Australia ... ..	320
Limestone Quarries, Accidents ... ..	101, 102
" " Persons employed ... ..	64
Lincolnshire, Chalk ... ..	158, 174
" Clay ... ..	158, 176
" Gravel and sand ... ..	158, 212
" Iron ore ... ..	158, 218, 219, 223
" Limestone ... ..	159, 252
" Sandstone ... ..	159, 267
" Blast furnaces ... ..	227, 230
" Coal conveyed by rail ... ..	188
" Persons employed ... ..	59, 65, 159



	Page.
Mica, Output of :	
United Kingdom ... ..	10, 139, 255, 306
Australia ... ..	309
Canada ... ..	328
Ceylon ... ..	337
India ... ..	344
Natal ... ..	348
Ontario ... ..	331
Quebec ... ..	332
Saxony ... ..	416
United States ... ..	462
Micaceous Iron ... ..	257
Michigan, Accidents at Coal Mines ... ..	464
" " " Ore " ... ..	465
" Output of Iron Ore ... ..	464
" Persons employed ... ..	461
" Coal-cutting machines ... ..	459
Middlesex, Chalk ... ..	158, 174
" Chert and flint ... ..	158, 175
" Clay ... ..	158, 176
" Gravel and sand ... ..	158, 212
" Persons employed in ... ..	65, 159
" Lead smelters ... ..	250
Midland coal-fields, Counties ... ..	54
" " Fatal accidents ... ..	94-97
" " Output of Minerals ... ..	182, 183
" " Persons employed ... ..	55, 56, 183
Midland Great Western Railway Coal and Coke traffic ... ..	190
Midland Railway Coal and Coke traffic ... ..	189
" " Coprolites conveyed ... ..	261
Milfraen Pit cage accident ... ..	80
Millstones, Output of :	
France ... ..	398
Greece ... ..	418
Servia ... ..	446
United States ... ..	462
Mine, Definition of ... ..	5
Mineral oil ( <i>see</i> Petroleum).	
Mineral output of the several Coal-fields ... ..	182, 183
" " per person employed ... ..	183
Mineral output of :	
United Kingdom, summary ... ..	10, 139-141
British Empire, summary ... ..	301
Foreign Countries, summary ... ..	301
Mines in each county ... ..	142-149
Quarries in each county ... ..	150-155
Shallow workings, &c., in each county ... ..	156, 157
Mineral output, County summary, all Mines, Quarries, &c. ... ..	158-163
Mineral paints, Output of United States ... ..	462
Mineral waters, Output of	
Canada ... ..	328
Italy ... ..	425
Spain ... ..	449
United States ... ..	462
Miners' Phthisis Commission Report ... ..	356
Minnesota, Output of Iron Ore ... ..	464
Mines and Quarries, Inspection districts ... ..	46, 47
Miscellaneous fatal accidents at Mines ... ..	22-25, 42, 43, 73, 87-91
" " Quarries 26, 27, 103, 104, 107, 108	
" non-fatal accidents at Mines ... ..	28-31
" " " Quarries ... ..	32, 33
Missouri, Accidents at Coal Mines ... ..	464
" Persons employed ... ..	461
" Coal-cutting machines ... ..	459
Molybdenite, Output of Australia ... ..	309
" " " New South Wales ... ..	312
" " " Norway ... ..	433
" " " Ontario ... ..	331
" " " Queensland ... ..	314
Monaghan Co., Limestone ... ..	163, 253
" Persons employed ... ..	67, 163

	Page.
Monasite, Output of :	
Brasil ... ..	331
United States ... ..	463
Monkland Canal, Coal and Coke traffic ... ..	192
Monmouthshire, Clay ... ..	158, 176
" Coal ... ..	158, 180, 184
" Gravel and sand ... ..	158, 212
" Iron ore ... ..	158, 218, 219
" Limestone ... ..	159, 232
" Sandstone ... ..	159, 267
" Blast furnaces ... ..	237, 230
" Coal conveyed by rail ... ..	188, 189
" Death-rate from accidents ... ..	98
" Persons employed ... ..	57, 62, 65, 98, 159
Montana, Accidents at Coal Mines ... ..	464
" Persons employed ... ..	461
" Coal-cutting machines ... ..	459
Montgomeryshire, Barytes ... ..	160, 169, 171
" Clay ... ..	160, 176
" Igneous rocks ... ..	160, 214
" Lead ore ... ..	161, 241, 244
" Limestone ... ..	161, 252
" Sandstone ... ..	161, 267
" Slate ... ..	161, 271, 274
" Zinc ore ... ..	161, 284, 286
" Persons employed ... ..	63, 66, 161
Morocco, Mineral workings of ... ..	431
Mount Kemble (N.S.W.), Colliery Accident ... ..	313
Mysore Gold Mines, Accidents ... ..	347
" " " Persons employed ... ..	347

## N.

NAIRN, Igneous rocks ... ..	160, 215
" Sandstone ... ..	161, 268
" Persons employed ... ..	66, 161
Naked lights, Explosions of fire-damp caused by Naphtha ( <i>see</i> Petroleum). ... ..	74-76
Naphtha, Accidents ... ..	302, 348
" Mineral output ... ..	301, 348
" Persons employed ... ..	300, 347
Natural gas, Output of :	
United Kingdom ... ..	10, 139, 256, 306
Canada ... ..	328
Ontario ... ..	331
United States ... ..	461
Nagri Sembilan, Output of Tin ... ..	34
New Caledonia, Mineral output ... ..	301, 43
" Persons employed ... ..	300, 43
Newfoundland, Accidents ... ..	302, 3
" Mineral output of ... ..	301, 3
" Persons employed ... ..	300, 3
New Guinea ( <i>see</i> British New Guinea).	
New Mexico, Accidents at Coal Mines ... ..	...
" Persons employed ... ..	...
" Coal-cutting machines ... ..	...
New South Wales, Accidents ... ..	302, 303, 3
" Mineral output ... ..	311
" Persons employed ... ..	...
New Zealand, Accidents ... ..	301
" Mineral output ... ..	301
" Persons employed ... ..	301
Nicaragua, Output of Gold ... ..	301
Nickel or nickel ore, Output of :	
United Kingdom ... ..	41, 19
Canada ... ..	...
German Empire ... ..	...
New Caledonia ... ..	...
Norway ... ..	43

	Page
<i>Nickel or nickel ore, Output of—cont.</i>	
Ontario ... ..	331
Prussia ... ..	411
Saxony ... ..	415
United States ... ..	463
Nigeria, Mineral wealth ... ..	352
Nitrate of soda, Output of Chili ... ..	385
Nitro-glycerine explosives, Precautions as to use at Quarries ... ..	106, 107
Non-fatal accidents at Mines in United Kingdom ... ..	28-31
"    "    Quarries ... ..	32, 33
Norfolk, Chalk ... ..	158, 174
"    Chert and flint ... ..	158, 175
"    Clay ... ..	158, 176
"    Gravel and sand ... ..	158, 212
"    Sandstone ... ..	159, 267
"    Persons employed ... ..	65, 159
Northamptonshire, Clay ... ..	158, 176
"    Gravel and sand ... ..	158, 212
"    Iron ore ... ..	158, 218, 220, 222, 223
"    Limestone ... ..	159, 252
"    Sandstone ... ..	159, 267
"    Blast furnaces ... ..	227, 230
"    Persons employed ... ..	59, 62, 65, 159
North Borneo, Mineral deposits ... ..	322
North British Railway, Coal and Coke traffic ... ..	190
North Eastern Railway, Coal and Coke traffic ... ..	189
Northern Coal-field, Counties ... ..	54
"    Fatal accidents ... ..	94-97
"    Output of Mineral ... ..	182, 183
"    Persons employed ... ..	55, 56, 183
North Staffordshire Railway, Coal and Coke traffic ... ..	189
"    "    Salt conveyed ... ..	265, 266
Northumberland, Barytes ... ..	158, 169, 170
"    Clay ... ..	158, 176
"    Coal ... ..	158, 180, 184
"    Gravel and sand ... ..	158, 212
"    Igneous rocks ... ..	158, 214
"    Lead ore ... ..	159, 241, 242
"    Limestone ... ..	159, 252
"    Sandstone ... ..	159, 267
"    Silver ... ..	241, 242
"    Zinc ore ... ..	159, 284, 285
"    Coal conveyed by rail ... ..	189
"    Copper smelters ... ..	208
"    Death-rate from accidents ... ..	98
"    Lead smelters ... ..	250
"    Persons employed ... ..	57, 62, 65, 98, 159
North Wales Coal-field, Counties ... ..	54
"    Fatal accidents ... ..	94-97
"    Output of Mineral ... ..	182, 183
"    Persons employed ... ..	55, 56, 183
Norway, Mineral output ... ..	301, 433
"    Persons employed... ..	300, 433
Notification of Accidents ... ..	119
Nottinghamshire, Clay ... ..	158, 176
"    Coal ... ..	158, 180, 184
"    Gravel and sand ... ..	158, 212
"    Gypsum ... ..	158, 213
"    Iron pyrites ... ..	158, 237
"    Limestone ... ..	159, 252
"    Sandstone ... ..	159, 267
"    Blast furnaces ... ..	227, 231
"    Coal conveyed by rail ... ..	188, 189
"    Copper smelters ... ..	208
"    Death-rate from accidents ... ..	98
"    Persons employed ... ..	57, 62, 65, 98, 159
Nova Scotia, Accidents ... ..	302, 331
"    Mineral output ... ..	330
"    Persons employed ... ..	330

	Page
<b>O.</b>	
<b>OILS AND LUBRICANTS, Output of :</b>	
United Kingdom ... ..	10, 41, 139, 256-258, 306
Bavaria ... ..	410
Belgium ... ..	378
Canada ... ..	328
Cyprus ... ..	339
France ... ..	398
Japan ... ..	427
Quebec ... ..	332
Saxony ... ..	416
Spain ... ..	449
Ohio, Accidents at Coal Mines ... ..	464
"    Persons employed ... ..	461
"    Coal-cutting machines ... ..	459
"    Output of Coal ... ..	463
Oil shale, Output of :	
United Kingdom ... ..	10, 41, 139, 258, 259, 306
Australia ... ..	309
New South Wales ... ..	312
New Zealand ... ..	351
Oil stones, Output of United States ... ..	462
Onyx, Output of :	
Algeria ... ..	360
France ... ..	398
Ontario, Accidents ... ..	302, 332
"    Mineral output ... ..	331
"    Persons employed ... ..	331
Opal, Output of :	
Australia ... ..	309
New South Wales ... ..	312
Queensland ... ..	314
Orange River Colony, Diamonds ... ..	352
Orkney, Sandstone ... ..	161, 268
"    Persons employed ... ..	66, 161
Output of Minerals from Mines in each inspection district under the Coal Mines Act ... ..	14, 15
Do. do. per Person employed ... ..	14, 15
Output of Minerals from Mines in each inspection district under the Metalliferous Mines Act ... ..	16, 17
Output of Minerals from Quarries in each inspection district under the Quarries Act ... ..	18, 19
Output of Minerals from certain shallow workings ... ..	20, 21
Output of Minerals from each county under the Coal Mines Act... ..	142-145
Output of Minerals from each county under the Metalliferous Mines Act ... ..	146-149
Output of Minerals from each county under the Quarries Act ... ..	150-155
Output of Minerals from shallow workings, brine wells, &c. ... ..	156, 157
Output of Minerals from the several Coal-fields ... ..	182, 183
"    "    from Mines, 1873 to 1902 ... ..	39
"    "    from Mines and Quarries, 1873 to 1902... ..	40, 41
"    "    in United Kingdom, General Summary ... ..	10, 139
"    "    in British Colonies ... ..	301
"    "    in Foreign Countries ... ..	301
"    "    (see also under each Colony and Country, and under each Mineral).	
Overwinding, Accidents from ... ..	22, 23, 28, 29, 79
Oxfordshire, Chalk ... ..	158, 174
"    Chert and flint ... ..	158, 175
"    Clay ... ..	158, 176
"    Gravel and sand ... ..	158, 212
"    Iron ore ... ..	158, 218, 223
"    Limestone ... ..	159, 252
"    Sandstone ... ..	159, 267
"    Persons employed ... ..	62, 65, 159
Ozokerite, Output of Austria ... ..	366

## P.

	Page.
PAHANG, Mineral output ... ..	340
Paraguay, Mineral deposits of ... ..	434
Patent fuel, Exported ... ..	185, 197-199
"    Shipped coastwise ... ..	193-195, 199
Paving stone, Output of :	
Bavaria ... ..	410
Belgium ... ..	378
France ... ..	398
Newfoundland ... ..	349
Tunis ... ..	456
Peat, Output of :	
Canada ... ..	328
France ... ..	397
Holland ... ..	419
Italy ... ..	425
Pebbles, Coal ... ..	160, 181, 184
"    Gravel and sand ... ..	160, 212
"    Igneous rocks ... ..	160, 215
"    Limestone ... ..	161, 253
"    Sandstone ... ..	161, 268
"    Persons employed ... ..	57, 66, 161
Pembroke, Chert and flint ... ..	160, 175
"    Coal and anthracite ... ..	160, 181, 182, 184
"    Igneous rocks ... ..	160, 214
"    Limestone ... ..	161, 252
"    Sandstone ... ..	161, 267
"    Slate ... ..	161, 171
"    Persons employed ... ..	57, 66, 161
Pennsylvania, Accidents ... ..	464
"    Output of Coal ... ..	460, 463
"    Persons employed ... ..	461
"    Coal-cutting machines ... ..	459
Perak, Output of Tin ... ..	340
Persia, Minerals obtained in ... ..	434
Persons employed in inspection districts under the Coal Mines Act ... ..	11
Persons employed in inspection districts under the Metalliferous Mines Act ... ..	12
Persons employed in inspection districts under the Quarries Act ... ..	13
Persons employed in each county under the Coal Mines Act ... ..	143, 145
Persons employed in each county under the Metal- liferous Mines Act ... ..	147, 149
Persons employed in each county under the Quarries Act ... ..	64-67, 151, 153, 155
Persons employed in the several Coal-fields ... ..	55, 56, 183
"    "    at Coal Mines ... ..	54, 55, 57, 58, 184
"    "    Iron Mines ... ..	54, 58-60
"    "    "other" Mines ... ..	54, 60-63
"    "    different kinds of Quarries ... ..	64
"    "    Mines, 1873 to 1902 ... ..	38
"    "    Mines and Quarries in United Kingdom, Summary ... ..	6, 9, 53, 163, 300, 305
"    "    Mines and Quarries in British Colonies, Summary of ... ..	300
Persons employed at Mines and Quarries in Foreign Countries, Summary of ... ..	300
Persons employed in Mining in :	
Algeria ... ..	300, 359
Australia ... ..	300, 308
Austria ... ..	300, 363-365
Bahamas ... ..	300, 321
Banco ... ..	390
Bavaria ... ..	409
Belgium ... ..	300, 375, 376
Billiton ... ..	390
Bohemia ... ..	371
Bosnia and Herzegovina ... ..	300, 373
British Borneo ... ..	300, 322

## I

## Persons employed in Mining in—cont.

British Columbia ... ..	...
British Guiana... ..	300
British New Guinea ... ..	...
Bulgaria ... ..	300
Canada ... ..	300, 329
Cape Colony ... ..	300
Ceylon ... ..	300
Chili ... ..	300
Corea ... ..	300
Dutch East Indies ... ..	300, 390
Federated Malay States ... ..	300
France ... ..	300
German Empire... ..	300, 402
Gold Coast ... ..	...
Greece ... ..	300
Greenland ... ..	300
Holland ... ..	300, 419
Hungary ... ..	300
India ... ..	300
Italy ... ..	300, 423
Japan ... ..	300
Kimberley ... ..	331
Luxemburg ... ..	300
Madagascar ... ..	300
Mexico ... ..	300
Natal ... ..	300
New Caledonia ... ..	300
Newfoundland ... ..	300
New South Wales ... ..	...
New Zealand ... ..	300
Norway ... ..	300
Nova Scotia ... ..	...
Ontario ... ..	...
Peru ... ..	300
Portugal ... ..	300
Prussia ... ..	...
Quebec ... ..	...
Queensland ... ..	...
Redonda ... ..	300
Rhodesia... ..	...
Russia ... ..	300
Saxony ... ..	...
Servia ... ..	300
Siam ... ..	300
Singkep ... ..	...
South Australia... ..	...
Spain ... ..	300, 447
Sumatra ... ..	...
Sweden ... ..	300
Switzerland ... ..	300, 453
Tasmania... ..	...
Transvaal ... ..	300
United States ... ..	300
Victoria ... ..	...
Western Australia ... ..	...
Persons employed at Petroleum Wells :	
Austria ... ..	...
Russia ... ..	...
Persons employed at Quarries :	
Algeria ... ..	...
Belgium ... ..	...
British Guiana ... ..	...
Ceylon ... ..	...
Channel Islands... ..	...
France ... ..	...
German Empire ... ..	...
India ... ..	...
Italy ... ..	...
Newfoundland ... ..	...
Peru ... ..	...
Portugal ... ..	...
South Australia ... ..	...
Sweden ... ..	...
Switzerland ... ..	453



	Page.		Page.
<b>Persons employed at Salt Works :</b>		Portuguese East Africa, Minerals...	439
Austria ...	364	" Nyassaland, Minerals ...	439
Bosnia and Herzegovina ...	373	Potassium, United Kingdom ...	262
German Empire ..	403	Potassium salts, Output of :	
Italy ...	423	German Empire...	403, 404
Russia ...	443	Prussia ...	411, 412
<b>Persons employed at Turbaries :</b>		Potter's clay, Exported ...	178
Holland ...	419	" Output of :	
Italy ...	423	United Kingdom ...	176
<b>Perthshire, Gravel and sand ...</b>	<b>160, 212</b>	France ...	397
" Igneous rocks ...	160, 215	Tunis ...	456
" Limestone ...	161, 253	Pozzolana, Output of Switzerland ...	455
" Sandstone ...	161, 268	Precious stones, Output of :	
" Slate ...	161, 271	Australia...	309
" Persons employed ...	66, 161	Borneo, Dutch ...	390
Peru, Mineral output ...	301, 435	Brazil ...	381
" Persons employed ...	300, 434	British Guiana ...	324
Petroleum, Imported ...	260	Cape Colony ...	334
Petroleum, Output of :		Ceylon ...	337
United Kingdom ... 10, 15, 139, 259, 301, 306		France ...	397
Austria ...	301, 366	German, East Africa ...	400
Canada ...	301, 328	Mexico ...	430
Dutch Borneo ...	391	New South Wales ...	312
Dutch East Indies...	301, 391, 392	Orange River Colony ...	352
German Empire ...	301, 403	Persia ...	434
Hungary ...	301, 372	Queensland ...	314
India ...	301, 344	Siam ...	446
Italy...	301, 425	Spain ...	449
Japan ...	301, 427	Transvaal ...	355
Java...	391	United States ...	462
Ontario ...	331	Western Australia ...	320
Peru ...	301, 435	Prices of sea-borne Coal in the London market...	186, 187
Prussia ...	411	" Coal at the pit's mouth ...	180, 181, 183, 184, 187
Roumania ...	301, 440	" " at various shipping ports ...	187
Russia ...	301, 444	" " Diagram shewing fluctuations from 1873	
Sumatra ...	392	to 1902 ...	290
United States ...	462	" Pig iron at the works ...	235, 236
Philippine Islands, Mineral deposits ...	436	" Antimony in London market ...	165
Phosphate of alumina, Output of Redonda ...	352	" Copper " " ...	202, 203
Phosphate of lime, Conveyed by railway...	261	" Lead " " ...	245, 246
" " Imported ...	261	" Standard silver " ...	270
" " Output of :		" Tin " " ...	279
United Kingdom 10, 41, 139, 260, 261, 306		" Zinc " " ...	288, 289
Algeria ...	360	" Cleveland Pig, Copper, Lead, Tin, and Zinc;	
Aruba ...	393	Diagrams shewing fluctuations from 1873	
Belgium ...	378	to 1902... ...	290
Canada ...	328	Prosecutions under the Mines Act ...	109-112
Chili ...	385	" " Quarries Act ...	112, 113
Christmas Island ...	338	" " Factory and Workshop Acts ...	113
France ...	398	" " (see also Appeals) ...	116
Norway ...	433	Prussia, Accidents ...	412-415
Porto Rico ...	436	" Mineral output ...	411, 412
Quebec ...	332	" Persons employed ...	410
Russia ...	444	" Report of Commission upon Accidents from	
Spain ...	449	Falls of Stone and Coal ...	415
Sweden ...	452	" Use of Safety Catches ...	83, 84
Tunis ...	456	" Ankylostomiasis in Westphalian Collieries ...	415
United States ...	462	Pyrites (see Arsenical pyrites, Copper ore, and Iron pyrites).	
<b>Pig iron (see Iron, Pig).</b>			
<b>Platinum, Output of :</b>			
Australia...	309		
Canada ...	328		
New South Wales ...	312		
Russia ...	444		
United States ...	463		
<b>Plumbago (see Graphite).</b>			
Porcelain earth, Output of Bavaria ...	410		
Porphyry, Output of Australia ...	309		
" " Queensland ...	314		
Porto Rico, Mineral deposits ...	436		
Portugal, Accidents ...	302, 438		
" Mineral output ...	301, 438		
" Persons employed ...	300, 437		
		<b>Q.</b>	
		<b>QUARRIES, Death-rate from accidents ...</b>	<b>8, 34, 100, 101</b>
		" Fatal accidents... ...	<b>7, 9, 26, 27, 99-109</b>
		(See also under Accidents.)	
		" Fatal accidents at different kinds of ...	<b>101, 102</b>
		" Non-fatal accidents ...	<b>32, 33</b>
		" Prosecutions of Owners and Workmen ...	<b>112, 113</b>

	Page.
QUARRIES, Suggestions for preventing accidents	100, 106, 107
" Remarks on laxity of owners regarding observance of regulations ...	113
" Number at work ...	13, 65-67
" Mineral output, summary of...	10
" " " in each county ...	150-155
" " " inspection district ...	18, 19
" Persons employed, summary of ...	6, 9, 64
" " " in each county ...	65-67, 151, 153
" " " in each inspection district ...	155
" " " at different kinds of ...	13
Quarries, Output of :	64
Algeria ...	360
Belgium ...	378
France ...	397, 398
Italy ...	425
Sweden ...	452
Switzerland ...	454, 455
Quartz, Output of :	
Saxony ...	416
United States ...	462
Quartzite (see Sandstone) ...	267, 268
Quebec, Accidents ...	302, 332
" Mineral output ...	332
" Persons employed ...	332
Queen's County, Coal ...	162, 181, 182, 184
" Igneous rocks ...	162, 215
" Limestone... ...	163, 253
" Persons employed ...	58, 67, 163
Queensland, Accidents ...	302, 303, 315
" Mineral output ...	314
" Persons employed ...	314
" Legislation ...	315
Quicksilver, United Kingdom ...	262
" Exported ...	263
" Imported ...	262
Quicksilver ore, Output of :	
Algeria ...	360
Austria ...	365
German Empire... ...	404
Hungary ...	372
Italy ...	425
Japan ...	427
Russia ...	444
Spain ...	449
United States ...	463

## R.

RADNORSHIRE, Igneous rocks ...	160, 214
" Limestone ...	161, 252
" Sandstone ...	161, 267
" Persons employed...	63, 66, 161
Railway traffic of Coal and Coke ...	188-190
Railways, Sidings, and Tramways, Accidents on, at Mines ...	22, 23, 28-31, 92-94
Railways, Sidings, and Tramways, Accidents on, at Quarries ...	26, 27, 32, 33, 103, 107-109
Redonda, Output of Phosphate of alumina ...	352
" Persons employed ...	300, 352
Red oxide of iron, Output of Gloucestershire and Somerset ...	257
Refiners, Antimony ...	165
" Arsenic ...	168, 169
Regulus, Exported ...	205
" Imported ...	206, 207

Renfrewshire, Barytes ...	160, 169
" Clay ...	160
" Coal ...	160, 181
" Gravel and sand ...	160
" Igneous rocks ...	160
" Iron ore ...	160, 218
" Limestone ...	161
" Sandstone ...	161
" Coal conveyed by rail ...	...
" Persons employed ...	57, 60, 63, 66
Rhodesia, Mineral output ...	301
" Persons employed ...	300
Roburite, Accidents with ...	...
Rock salt, Carted inland ...	...
" Conveyed by railways, &c. ...	...
" Exported ...	...
" Output of United Kingdom ...	10
Ronaldson, J. M., Remarks on the want of discipline among miners ...	...
Roofing slates, Exported ...	274
Ropes or chains breaking, Accidents from ...	22, 20
" " Return of breakages of winding ropes ...	30, 32, 80-87, 108
Roscommon Co., Coal ...	162, 181
" Sandstone... ...	163
" Persons employed ...	58, 67
Ross and Cromarty, Sandstone ...	161
" Persons employed ...	64
Roumania, Mineral output ...	301
Roxburgh, Igneous rocks ...	160
" Limestone ...	161
" Sandstone ...	161
" Persons employed ...	66
Russia, Accidents ...	...
" Mineral output ...	301, 443
" Persons employed ...	300
Rutile (see Titanium).	
Rutland, Iron ore ...	158, 218
" Limestone ...	159
" Sandstone ...	159
" Persons employed ...	65

## S.

SABA, Sulphur deposits ...	...
Safety catches, Use of ...	...
" fuses, Accidents with ...	...
" lamps, Accidents caused by ...	...
St. Martin, Salt workings ...	...
Sahara, Salt deposits ...	...
Salt, Exported ...	...
" Conveyed by railway, canal, &c. ...	265
" Rock and white, Output of :	
United Kingdom ...	10, 41, 139, 264, 301
Abyssinia ...	301
Aden ...	301
Algeria ...	301
Australia ...	301
Austria ...	301
Bahamas ...	301
Bavaria ...	...
Bonaire and St. Martin ...	...
Bosnia and Herzegovina ...	301
Brazil ...	301
Canada ...	301
Cape Colony ...	301
Ceylon ...	301
Chili ...	301

	Page.		Page.
<b>Salt, Rock and white, Output of—cont.</b>		<b>Shaft Accidents</b> ... .. 22-25, 28-31, 42, 43, 73, 78-87	
China ... ..	301, 386	<b>Shale (see Oil shale).</b>	
Cochin China ... ..	421	<b>Shetland, Sandstone...</b> ... .. 161, 268	
Curaçoa ... ..	393	Persons employed ... .. 66, 161	
Cyprus ... ..	301, 339	<b>Shipments of China clay, and stone</b> ... .. 177	
Dutch West Indies ... ..	301, 393	Coal, coke, &c. coastwise ... .. 193-195	
Formosa ... ..	394	<b>Shot-firing, Accidents caused by, in Mines</b> ... .. 75	
France ... ..	301, 397	" " " Quarries ... .. 105, 106	
German Empire ... ..	301, 403-405	<b>Shropshire, Barytes</b> ... .. 158, 169, 171	
Greece ... ..	301, 418	Clay ... .. 158, 176	
Honduras ... ..	301, 421	Coal ... .. 158, 180, 184	
Hungary ... ..	301, 372	Gravel and sand ... .. 158, 212	
India ... ..	301, 344	Igneous rocks ... .. 158, 214	
Indo China ... ..	301, 421	Iron ore... .. 158, 218, 219	
Italy ... ..	301, 425	Iron pyrites ... .. 158, 237	
Japan ... ..	301, 427	Lead ore ... .. 159, 241, 242	
Mexico ... ..	301, 430	Limestone ... .. 159, 252	
Ontario ... ..	331	Sandstone ... .. 159, 267	
Persia ... ..	301, 434	Zinc ore... .. 159, 284, 285	
Peru ... ..	301, 435	Blast furnaces ... .. 227, 231	
Prussia ... ..	411, 412	Coal conveyed by rail... .. 188, 189	
Roumania ... ..	301, 440	Death-rate from accidents ... .. 99	
Russia ... ..	301, 444	Persons employed ... .. 57, 59, 62, 65, 99, 159	
Siam ... ..	301, 446	<b>Shropshire Union Canal, Coal and Coke traffic</b> ... .. 191	
South Australia ... ..	316	<b>Siam, Mineral output</b> ... .. 301, 446	
Spain ... ..	301, 449	Persons employed ... .. 300, 446	
Switzerland ... ..	301, 455	<b>Silicon iron</b> ... .. 228	
Tunis ... ..	301, 456	<b>Silver bullion and specie, Imported and exported, Value</b>	
Turkey ... ..	301, 457	of ... .. 269	
Turks and Caicos Islands ... ..	301, 358	" extractors and refiners (see Copper and Lead	
United States ... ..	301, 462	smelters) ... .. 207, 208, 250, 251	
Venezuela ... ..	301, 467	" extracted from imported Pyrites ... .. 239, 268	
Western Australia ... ..	320	" obtainable from British Lead ore ... .. 241-244	
<b>Saltpetre, Output of India</b> ... ..	344	" Prices of standard, in London market ... .. 270	
<b>Sand and gravel, Output of :</b>		" ore, Imported ... .. 269	
United Kingdom ... ..	10, 41, 139, 212, 213	<b>Silver or silver ore, Output of :</b>	
Algeria ... ..	360	United Kingdom ... .. 139, 268, 301, 307	
Bavaria ... ..	410	Abyssinia ... .. 301, 359	
Belgium ... ..	378	Algeria ... .. 301	
Canada ... ..	328	Argentine Republic ... .. 301, 361	
France ... ..	398	Australia ... .. 301, 309	
Nova Scotia ... ..	330	Austria ... .. 301, 365	
United States ... ..	462	Bolivia ... .. 301, 380	
<b>Sandstone, Output of :</b>		British Columbia ... .. 329	
United Kingdom ... ..	10, 41, 139, 306	Canada ... .. 301, 328	
Australia ... ..	309	Chili ... .. 301, 385	
Bavaria ... ..	410	Colombia ... .. 301, 387	
Queensland ... ..	314	Dutch East Indies ... .. 301, 392	
<b>Sandstone Quarries, Accidents</b> ... ..	101, 102	Ecuador ... .. 301, 393	
" " Persons employed ... ..	64	France ... .. 301	
<b>Sandwich Islands, Mineral Deposits</b> ... ..	445	German Empire ... .. 301, 404, 406	
<b>Sarawak, Mineral output</b> ... ..	323	Honduras ... .. 301, 421	
<b>Saxonia, Accidents with</b> ... ..	88	Hungary ... .. 301, 372	
<b>Saxony, Accidents</b> ... ..	416	Italy ... .. 301, 425	
Mineral output ... ..	415, 416	Japan ... .. 301, 427	
Persons employed ... ..	415	Mexico ... .. 301, 430	
Use of Safety Catches ... ..	85	New South Wales ... .. 312	
<b>Scotch Coal-fields, Counties</b> ... ..	54	New Zealand ... .. 301, 351	
" " Fatal Accidents ... ..	94-97	Norway ... .. 301, 433	
" " Output of minerals ... ..	182, 183	Ontario ... .. 331	
" " Persons employed ... ..	55, 56, 183	Peru ... .. 301, 435	
<b>Scotland, Summary of Mineral output</b> ... ..	141	Prussia ... .. 411	
Copper smelters ... ..	208	Queensland ... .. 314	
Explosions from naked lights ... ..	76	Russia ... .. 301, 444	
Lead smelters ... ..	251	Saxony ... .. 416	
Railway and canal traffic of Coal and coke ... ..	189, 190, 192	Servia ... .. 301, 446	
<b>Selangor, Output of Tin</b> ... ..	341	South Australia... .. 301	
<b>Selkirk, Igneous rocks</b> ... ..	160, 215	Spain ... .. 301, 449	
Persons employed ... ..	66, 161	Sweden ... .. 301, 452	
<b>Senegal, Gold exported</b> ... ..	444	Tasmania ... .. 301	
<b>Servia, Accidents</b> ... ..	302, 446	United States ... .. 301, 463	
Mineral output ... ..	301, 446	Uruguay ... .. 301, 466	
Persons employed ... ..	300, 445	Victoria ... .. 318	
<b>Severn Navigation Coal and Coke traffic...</b>	191	Western Australia ... .. 320	



	Page.		Page.
Silver lead ore, Output of :		Somersetshire, Death-rate from accidents	...
United Kingdom	241-244	" Lead smelters	...
Algeria	360	" Tin smelters	...
Australia...	309	" Persons employed	57, 62, 65, 98, 1
Bolivia	380	Soudan, Mineral wealth	...
Chili	385	South Australia, Mineral output	...
France	397	" Persons employed	...
Greece	418	South Wales Coalfield, Counties	...
Hungary	372	" " " Fatal accidents	94
New South Wales	312	" " " Mineral output	182, 1
South Australia...	316	" " " Persons employed	55, 56, 1
Spain	449	Spain, Accidents	302, 449, 1
Sweden	452	" Mineral output	301, 448, 1
Tasmania	317	" Persons employed	300, 447, 1
Turkey	457	Special Bulldog powder, Accidents with...	...
Western Australia	320	Spelter ( <i>see</i> Zinc)	284
Singkep, Output of Tin	392	Spiegeleisen ( <i>see</i> Iron)	2
" Persons employed...	392	Spitzbergen coal deposits	45
Slate, Output of :		Staffordshire, Clay	158, 171
United Kingdom	10, 41, 139, 270-274, 306	" Coal	158, 180, 181
Bavaria	410	" Gravel and sand	158, 213
Belgium	378	" Gypsum	158, 213
Canada	328	" Igneous rocks	158, 214
France	398	" Iron ore	158, 218, 219, 223
Newfoundland	349	" Iron pyrites	158, 237
Quebec	332	" Limestone	159, 253
Slate Quarries, Accidents	101, 102, 108	" Salt	159, 264
" Persons employed	64	" Sandstone	159, 267
Slates, roofing, Exported	274, 275	" Blast furnaces	227, 231
Sligo Co., Barytes	162, 170, 171	" Coal conveyed by rail	188, 189
" Bog ore	163	" Death-rate from accidents...	96
" Coal	162, 181, 184	" Persons employed	57, 59, 62, 65, 98, 159
" Limestone...	163, 253	Staffordshire and Worcestershire Canal, Coal and Coke	
" Persons employed	58, 63, 67, 163	" traffic	193
Sligo, Leitrim and Northern Counties Railway, Coal and		" " " Salt conveyed	266
Coke traffic	190	Standard silver, Prices in the London market	270
Small detached coalfields, Counties	54	Steatite ( <i>see</i> Soapstone).	
" " Fatal accidents	94-97	Stirlingshire, Clay	160, 176
" " Output of minerals	182, 183	" Coal	160, 181, 184
" " Persons employed	55, 56, 183	" Gravel and sand	160, 212
Smelters, Antimony	165	" Igneous rocks	160, 215
" Copper	207, 208	" Iron ore	160, 218, 219
" Lead	250, 251	" Limestone	161, 253
" Tin	282	" Oil shale	161, 258
" Zinc...	289	" Sandstone	161, 268
Soapstone, Output of :		" Blast furnaces	227, 234
United Kingdom	275	" Coal conveyed by rail	189
Bavaria	410	" Death-rate from accidents	98
France	398	" Persons employed	57, 63, 66, 98, 161
Spain	449	Stones, Output of :	
United States	462	Algeria	360
Soda ( <i>see</i> Nitrate of soda).		Australia...	309
Sodium, Production in United Kingdom...	139, 275, 307	Belgium	378
Sodium sulphate, Output of :		Canada	328
German Empire...	404	Ceylon	337
Prussia	412	Channel Islands...	338
Russia	444	France	398
Spain	449	Holland	420
Somali Coast Protectorate, Mineral deposits	353	Malta	347
Somersetshire, Chalk	158, 174	Newfoundland	349
" Chert and flint	158, 175	New South Wales	312
" Clay	158, 176	Ontario	331
" Coal	158, 180, 184	Queensland	314
" Fuller's earth	176	Roumania	440
" Gravel and sand	158, 212	Tunis	456
" Gypsum	158, 213	United States	462
" Iron ore	158, 218, 223	Victoria	318
" Lead ore	159, 241, 244	Stowite, Accidents with	88
" Limestone	159, 252	Straits Settlements, Mineral output	353
" Ochre	159, 256, 257	Strontium sulphate, Output in United Kingdom	10, 41, 139, 275, 276, 306
" Sandstone	159, 267	Suffocation by natural gases, Accidents from	22, 23, 28, 29, 87, 89
" Slate	159, 271		
" Strontium sulphate	275		
" Coal conveyed by rail	188, 189		
" Copper smelters	208		

	Page.
Wexford Co., Igneous rocks .. .. .	162, 215
" Limestone .. .. .	163, 253
" Sandstone .. .. .	163, 268
" Slate .. .. .	163, 271
" Persons employed .. .. .	67, 163
Whetstones, Production of :	
Bavaria .. .. .	410
France .. .. .	398
White salt, Conveyed by railway, canal, &c. ..	265, 266
Exported .. .. .	266
Produced in United Kingdom .. .. .	264
Wicklow Co., Copper ore .. .. .	162, 200, 201
" Gravel and sand .. .. .	162, 213
" Igneous rocks .. .. .	162, 215
" Iron pyrites .. .. .	162, 237
" Ochre .. .. .	163, 256, 257
" Persons employed .. .. .	63, 67, 163
Wigtown, Igneous rocks .. .. .	160, 215
" Persons employed .. .. .	66, 161
Wiltshire, Chalk .. .. .	158, 174
" Clay .. .. .	158, 176
" Gravel and sand .. .. .	158, 212
" Limestone .. .. .	159, 252
" Sandstone .. .. .	159, 267
" Blast furnaces .. .. .	227, 232
" Persons employed .. .. .	62, 65, 159
Winding ropes, Return of breakages .. .. .	81
Windsor Colliery shaft accident .. .. .	80
Wolfram, Output of :	
United Kingdom .. .. .	10, 41, 139, 283, 306
Australia .. .. .	309
Austria .. .. .	365
Bolivia .. .. .	380
German Empire .. .. .	404
Portugal .. .. .	438
Queensland .. .. .	314
Saxony .. .. .	416
South Australia .. .. .	316
Spain .. .. .	449
Worcestershire, Clay .. .. .	158, 176
Coal .. .. .	158, 180, 184
Gravel and sand .. .. .	158, 212
Igneous rocks .. .. .	158, 214
Iron ore .. .. .	158, 218, 219, 223
Iron pyrites .. .. .	158, 237
Limestone .. .. .	159, 252
Salt .. .. .	159, 264
Sandstone .. .. .	159, 267
Blast furnaces .. .. .	227, 232
Copper smelters .. .. .	208
Death-rate from accidents .. .. .	98
Persons employed .. .. .	57, 62, 65, 98, 159
Wyoming, Accidents at Coal Mines .. .. .	465
Persons employed at Coal Mines .. .. .	461
Coal-cutting machines .. .. .	459

## Y.

YORKSHIRE, Alum shale .. .. .	159, 164
" Barytes .. .. .	158, 169, 171
" Chalk .. .. .	158, 174

	Page.
Yorkshire, Chert and flint .. .. .	158, 175
" Clay .. .. .	158, 176
" Coal .. .. .	158, 180, 184
" Gravel and sand .. .. .	158, 212
" Gypsum .. .. .	158, 213
" Igneous rocks .. .. .	158, 214
" Iron ore .. .. .	158, 218, 219, 223
" Iron pyrites .. .. .	158, 237
" Lead ore .. .. .	159, 241, 243
" Limestone .. .. .	159, 252
" Petroleum .. .. .	159, 259
" Salt .. .. .	159, 264
" Sandstone .. .. .	159, 267
" Blast furnaces .. .. .	227, 232
" Coal conveyed by rail and canal .. .. .	188, 189, 191
" Copper smelters .. .. .	208
" Death-rate from accidents .. .. .	98
" Lead smelters .. .. .	251
" Persons employed .. .. .	57, 59, 62, 65, 98, 159
" Coalfield, Counties .. .. .	54
" " Fatal accidents .. .. .	94-97
" " Mineral output .. .. .	182, 183
" " Persons employed .. .. .	55, 56, 183
Young persons, Fatal accidents to .. .. .	35, 73, 116-118

## Z.

ZINC, Average price in the London market ..	288, 289
" Diagram shewing fluctuations in price from 1873 to 1902 (Plate III.) .. .. .	290
" Obtainable from British ores .. .. .	139, 284-286
" Smelters in United Kingdom .. .. .	289
" and zinc ore, Exported .. .. .	287, 288
" " Imported .. .. .	287
" or zinc ore, Output of :	
United Kingdom .. .. .	10, 41, 139, 284-286, 301, 306, 307
Algeria .. .. .	301, 360
Australia .. .. .	301, 309
Austria .. .. .	301, 365
Belgium .. .. .	301, 378
Bolivia .. .. .	380
Canada .. .. .	301, 328
France .. .. .	301, 397
German Empire .. .. .	301, 404
Greece .. .. .	301, 418
Italy .. .. .	301, 425
Mexico .. .. .	301, 430
New South Wales .. .. .	312
Norway .. .. .	301, 433
Ontario .. .. .	331
Portugal .. .. .	301, 438
Prussia .. .. .	411
Russia .. .. .	301, 444
Saxony .. .. .	416
Servia .. .. .	301, 446
Spain .. .. .	301, 449
Sweden .. .. .	301, 452
Tunis .. .. .	301, 456
Turkey .. .. .	301, 457
United States .. .. .	301, 462, 463





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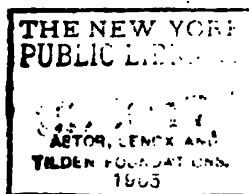


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# CONTENTS.

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	PAGE.
Introduction ... ..	297, 298
<b>British Empire and Foreign Countries :—</b>	
Summary of Persons Employed at Mines and Quarries ... ..	300
Summary of Output of certain Minerals ... ..	301
Summary of Accidents and Death-rates per 1,000 Persons Employed at Mines and Quarries ... ..	302, 303
Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings in the British Empire :—	
United Kingdom ... ..	305-307
British Colonies and Dependencies :—	
Aden... ..	308
Australia ... ..	308-321
Bahamas ... ..	321
Barbados ... ..	321
Basutoland ... ..	322
Bechuanaland Protectorate... ..	322
British Borneo ... ..	322, 323
British Central Africa Protectorate ... ..	323
British Guiana ... ..	323-325
British New Guinea ... ..	325
British Solomon Islands ... ..	325
Canada ... ..	325-333
Cape Colony ... ..	333-337
Ceylon ... ..	338
Channel Islands ... ..	339
Christmas Island ... ..	339
Cyprus ... ..	340
Federated Malay States ... ..	340-342
Gold Coast ... ..	342, 343
India ... ..	343-349
Malta ... ..	349
Natal ... ..	349, 350
Newfoundland ... ..	350, 351
New Zealand... ..	352, 353
Nigeria ... ..	354
Orange River Colony ... ..	354, 355
Redonda .. ..	355
Rhodesia ... ..	355, 356
St. Lucia .. ..	356
Somali Coast Protectorate ... ..	356
Straits Settlements ... ..	356
Transvaal ... ..	357-359
Trinidad ... ..	360
Turks and Caicos Islands ... ..	360
Uganda Protectorate ... ..	361
Wei-hai-wei ... ..	361

Details relating to Persons Employed, Mineral Output, and Accidents at Mines,  
Quarries, and other Mineral Workings in Foreign Countries :—

	PAGE.
Abyssinia ... ..	362
Algeria ... ..	362-364
Arabia... ..	364
Argentine Republic... ..	364, 365
Austria-Hungary ... ..	365-375
Belgium ... ..	378-382
Bolivia ... ..	382, 383
Bosnia and Herzegovina ... ..	376, 377
Brazil ... ..	383, 384
Bulgaria ... ..	385
Cameroons ... ..	386
Canary Islands ... ..	386
Chili ... ..	386-388
China... ..	389, 390
Colombia ... ..	390
Congo Free State ... ..	391
Corea ... ..	391
Costa Rica ... ..	391
Cuba ... ..	391, 392
Denmark ... ..	392
Dutch East Indies ... ..	393-395
Dutch Guiana or Surinam ... ..	395
Dutch West Indies ... ..	396
Ecuador ... ..	396
Egypt ... ..	397
Eritrea ... ..	397
Formosa ... ..	397, 398
France... ..	398-403
French Guiana ... ..	403
German East Africa... ..	403, 404
German Empire ... ..	404-419
German South West Africa ... ..	420
Greece ... ..	420, 421
Guatemala ... ..	422
Hayti ... ..	422
Holland ... ..	422, 423
Honduras ... ..	424
Indo-China ... ..	424, 425
Italy ... ..	425-429
Ivory Coast ... ..	429
Japan ... ..	429-431
Johore... ..	432
Liberia ... ..	432
Luxemburg ... ..	432
Madagascar ... ..	432, 433
Mexico ... ..	433, 434





**MINES AND QUARRIES:**  
**GENERAL REPORT AND STATISTICS**

**For 1903.**

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**PART IV.—COLONIAL AND FOREIGN STATISTICS.**

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**INTRODUCTION.**

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This part of the Report is intended to give general information concerning the mining and quarrying industries of the colonies and foreign countries; it is compiled from various official and unofficial sources, which are duly indicated in every case. Great difficulties in preparing this part of the volume arise either from want of adequate official statistics or from the lateness of their publication. In several cases the statistics for 1903 were not received until the present year was well advanced, and even now those for Greece, Norway, Roumania and Russia are not available.

The general results are summed up in Tables 278, 279, and 280, and though the figures are not complete, they are sufficient to give a fair general idea of the relative importance of mining in each country.

According to Table 278 the number of persons engaged in mining and quarrying at home and abroad in 1903 was close upon 5 millions and shows a substantial increase on the figures for the preceding year. Of this total, roughly speaking, one-fifth were employed in the United Kingdom and one-third in the British Empire.

It should be noted, however, that no statistics are published by several countries, *e.g.*, Brazil, China, Persia and Turkey, in which mining is carried on, or for the ore mines and quarries of the United States, and the figure in this Table probably falls considerably short of the real total.

More than half of the total number were employed in getting coal alone; Great Britain employing over three-quarters of a million, the United States and Germany over half a million each, France 167,000, Belgium 139,000, Austria 121,000, and India 86,000.

Table 279 summarizes the world's output of the most important minerals in 1903. The total amount of coal produced was 881 million tons, the value of which is estimated at more than 310 million pounds sterling.

The following figures show the main sources from which the fuel supply of the world is obtained :—

Country.	Quantity.		Value.	
	Metric Tons.	Increase on 1902.	£	Increase or Decrease on 1902.
United States ... ..	324,195,000	Metric Tons. 50,595,000	103,434,000	+ 28,061,000
Great Britain .. ...	234,030,000	3,291,000	88,228,000	— 5,293,000
Germany ... ..	162,457,000	11,857,000	55,628,000	+ 2,974,000
Austria-Hungary ... ..	40,160,000	681,000	10,272,000	— 256,000
France ... ..	34,906,000	4,909,000	19,567,000	+ 2,108,000
Belgium ... ..	23,796,000	919,000	12,360,000	+ 279,000

Gold shows an increase of 44,028 kilograms, for which the workings in the British Empire are responsible. As in previous years the British Empire supplied more than one half of the world's output ; Australia contributing supplying 24 per cent., the Transvaal 19 per cent., and Canada 6 per cent. of the total. The United States contributed 22 per cent. The total output was 491,672 kilograms (15,807,611 ozs.) of which the value is estimated at over 67 millions sterling.

In the case of iron, the United States with an output of 18 million tons is considerably ahead of any other country. The German Empire with 5½ million tons and Great Britain with about 4½ million tons come next. It is important to point out that the quantities of iron, and indeed the quantities of the other metals included in Table 279, are those which are considered obtainable from the ores raised in the countries in question, and must not necessarily be taken as a measure of their metallurgical industries.

The total value of the figures shown in Table 279 may be roughly taken as representing over 700 millions sterling.

Table 280 shows the loss of life from accidents in mines and quarries, and the death-rates from accidents per 1,000 persons employed.

Taking coal mines for which the figures are fairly complete, it will be seen that the death-rate of the United Kingdom is 1·26, and for the British Empire 1·33 ; while for France it is 1·02, for Germany 2·00, and for the United States 3·09. The death-rate for foreign countries generally is 2·14.

In the case of gold mines, complete figures are only available for the British Empire. They show a rise in the death-rate from 2·02 to 2·61.

Home Office, Whitehall,  
27th June, 1905.

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SUMMARIES.

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PERSONS EMPLOYED—OUTPUT—ACCIDENTS,  
1902-1903.

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TABLE No. 278.

SUMMARY of the number of PERSONS EMPLOYED at MINES, QUARRIES, and other MINERAL WORKINGS in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the YEARS 1902 and 1903.

Country.	1902.	1903.
GREAT BRITAIN AND IRELAND ... ..	952,711	970,044
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—		
Aden ... ..	*	*
Australia ... ..	108,610†	112,672
Bahamas ... ..	256	354
Barbados ... ..	100†	100†
Basutoland ... ..	*	*
Bechuanaland Protectorate ... ..	*	*
British Borneo ... ..	500†	500
British Central Africa Protectorate ... ..	*	*
British Guiana ... ..	11,412	12,025
British New Guinea ... ..	250	250
British Solomon Islands ... ..	*	*
Canada (a) ... ..	33,295	34,213
Cape Colony ... ..	16,262	18,151
Ceylon ... ..	59,269	74,218
Channel Islands ... ..	1,200	1,200
Christmas Island ... ..	550§	550§
Cyprus ... ..	*	*
Federated Malay States ... ..	179,951	186,337
Gold Coast ... ..	6,130†	6,779
India ... ..	156,755	144,788
Malta ... ..	*	*
Natal (including Zululand) ... ..	3,850	4,405
Newfoundland ... ..	1,756	2,067
New Zealand ... ..	14,283	13,062
Nigeria ... ..	*	*
Orange River ... ..	*	5,431
Redonda ... ..	12	66
Rhodesia ... ..	8,000	7,533¶
Somali Coast Protectorate ... ..	*	*
Straits Settlements ... ..	*	*
Transvaal ... ..	42,839†	82,522
Trinidad ... ..	*	*
Turks and Caicos Islands ... ..	*	*
Uganda Protectorate ... ..	*	*
Wei-hai-wei ... ..	*	*
TOTAL for BRITISH EMPIRE ... ..	1,597,991	1,677,267
FOREIGN COUNTRIES:—		
Austria-Hungary ... ..	231,035	225,104
Bosnia and Herzegovina ... ..	2,570	2,608
Belgium ... ..	172,218	177,652
Bulgaria ... ..	1,372	1,688
Chili ... ..	24,538**	24,445**
Corea ... ..	1,236§	1,236§
Denmark ... ..	—	—
Greenland ... ..	56	76
France ... ..	315,281	321,883
Algeria ... ..	7,307	7,890
Indo-China ... ..	2,500	2,500
Madagascar ... ..	3,000	3,000
New Caledonia ... ..	5,090†	5,090†
Tunis ... ..	1,600†	1,803
German Empire ... ..	761,922††	784,616††
Greece ... ..	9,500§	9,500§
Holland ... ..	4,169	4,699
Dutch East Indies ... ..	25,100	26,388
Italy ... ..	124,952	125,417
Japan ... ..	155,379	163,530
Luxemburg ... ..	5,197	6,024
Mexico ... ..	96,020	96,020§§
Norway ... ..	3,505	4,503§§
Panama ... ..	—	1,000
Peru ... ..	105,000§	105,000§
Portugal ... ..	8,873††	9,263††
Roumania ... ..	*	*
Russia ... ..	344,245	344,245§§
Servia ... ..	2,349†	2,436
Siam ... ..	26,250†	26,250
Spain ... ..	87,508	91,364
Sweden ... ..	14,654	14,422
Switzerland ... ..	1,671	1,687
United States ... ..	557,407(b)	594,294(c)
TOTAL for FOREIGN COUNTRIES ... ..	3,101,504	3,184,665
TOTAL for the WORLD ... ..	4,699,495	4,861,932

- \* Information not available. † Revised figures. ‡ Figures for 1898.  
§ Figures for 1900. || For six months only. ¶ Matabele Mines only.  
\*\* Persons employed in Saltpetre Works only.  
†† These figures include the average number of persons employed full time at Quarries see p. 411.  
‡‡ Including persons employed at Quarries for 1890. §§ Figures for 1902.  
(a) For British Columbia, Nova Scotia, Ontario, and Quebec only.  
(b) Coal Miners and only Ore Miners of Michigan (Houghton Co.) Missouri and Montana.  
(c) Coal Mines and only Ore Miners of Michigan (Houghton Co.) and Missouri.

RY of OUTPUT\* of CERTAIN MINERALS and METALS (contained in or obtained from Ore raised in the individual Countries) in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the Year 1903.

or two cases in which the figures of minerals are not obtainable the quantity given. Fuller particulars will be stated tables.

† Converted into fine silver, on the total value of ingots, matte, ore, and sulphide exported.

‡ Output of Coal from Provinces of Kiangsi, Pechili, Shanai and Shantung; for Iron, Province of Hupei; for Lead and Tin, Province of Yunnan; and Salt from Szechuan only.

§ Figures for 1902.

¶ Gold and Silver for calendar year 1902; other minerals for 1902-3.

|| Figures for 1902 with the exception of gold, iron, petroleum, and zinc, which are for 1903.

§§ Figures for 1894.

(a) Including some metal obtained from imported ore.



TABLE No. 280.

SUMMARY of ACCIDENTS at MINES, QUARRIES, and other MINERAL WORKINGS in the

COUNTRY.	DEATHS FROM ACCIDENTS.											
	1902.						1903.					
	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.
GREAT BRITAIN AND IRELAND ..	1,005	—	48	1,053	119	1,172	1,048	—	49	1,097	95	1,192
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS :—												
Aden* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Australia :—												
New South Wales .. .. .	105	6	14	124	—	—	13	7	16	36	—	—
Queensland .. .. .	1	13	3	17	—	—	—	18	9	27	—	—
South Australia* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Tasmania .. .. .	—	—	—	5	—	—	—	—	—	14	—	—
Victoria .. .. .	1	33	—	34	—	—	1	31	—	23	—	—
Western Australia .. .. .	—	39	—	39	—	—	1	41	1	43	—	—
Bahamas* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Barbados* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Basutoland* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Bechuanaland Protectorate* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
British Borneo* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
British Central Africa Protectorate* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
British Guiana .. .. .	—	6	—	6	—	6	—	4	—	4	—	4
British New Guinea* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
British Solomon Islands* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Canada :—												
British Columbia .. .. .	139	†	13	152	—	—	43	†	18	60	—	—
Nova Scotia .. .. .	19	1	—	—	—	—	24	—	—	—	—	—
Ontario .. .. .	—	—	10	10	—	—	—	2	5	7	—	—
Quebec .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Cape Colony .. .. .	4	—	45†	—	—	—	3	—	32‡	—	—	—
Ceylon .. .. .	—	—	—	7	—	7	—	—	—	17	2	19
Channel Islands* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Christmas Island* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Cyprus* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Federated Malay States .. .. .	—	—	—	57	—	—	—	—	—	63	—	—
Gold Coast .. .. .	—	—	—	—	—	—	—	15	—	15	—	—
India .. .. .	77	59	12	148	—	—	97	71	17	185	—	—
Malta* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Natal (including Zululand)† .. .. .	15†	—	—	—	—	—	13	—	—	—	—	—
Newfoundland .. .. .	—	—	1	1	5	6	—	—	4	4	2	6
New Zealand .. .. .	2	14	—	—	—	—	4	19	—	—	—	—
Nigeria* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Orange River* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Redonda* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Rhodesia .. .. .	—	—	—	—	—	—	—	—	—	50	—	—
Somali Coast Protectorate* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Straits Settlements* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Transvaal .. .. .	23	143	—	166	—	—	32	310	11	353	—	—
Trinidad* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Turks and Caicos Islands* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Uganda Protectorate* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Wei-hai-wei* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL FOR BRITISH EMPIRE ..	1,391†	313	—	—	—	—	1,278	508	—	—	—	—
FOREIGN COUNTRIES :—												
Austria-Hungary :—												
Austria .. .. .	196	—	40	236	—	—	103	—	12	115	—	—
Hungary .. .. .	—	—	—	114	—	—	—	—	—	96	—	—
Bosnia and Herzegovina .. .. .	2	—	—	2	—	—	1	—	—	1	—	—
Belgium .. .. .	144	—	—	144	1	145	159	—	1	160	31	191
Bulgaria .. .. .	3	—	—	—	—	—	—	—	—	—	—	—
France .. .. .	180	—	17	197	156	353	170	—	45	215	144	359
Algeria .. .. .	—	—	—	3	17	20	—	—	—	5	14	19
New Caledonia* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
German Empire .. .. .	973	—	107**	1,080**	217	1,297**	1,046	—	113**	1,159**	217	1,376**
Greece* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Holland .. .. .	2	—	—	2	—	—	4	—	—	4	—	—
Italy .. .. .	—	—	—	86	53	139	—	—	—	110	44	154
Japan .. .. .	135	—	193	328	—	—	215	—	94	309	—	—
Mexico* .. .. .	—	—	—	220	—	—	—	—	—	—	—	—
Norway* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Peru* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Portugal .. .. .	—	—	4	4	—	—	—	—	4	4	—	—
Roumania* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Russia* .. .. .	267	55‡	71§§	393§§	36	429§§	—	—	—	—	—	—
Servia .. .. .	—	—	—	1	—	—	—	—	—	2	—	—
Spain .. .. .	—	—	—	255	—	—	—	—	—	240	—	—
Sweden .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Switzerland .. .. .	—	—	—	—	1	16	—	—	—	—	2	25
United States .. .. .	1,732¶¶	—	—	—	—	—	1,715¶¶	—	—	—	—	4
TOTAL FOR FOREIGN COUNTRIES.	3,634	—	—	—	—	—	3,413	—	—	—	—	—
TOTAL for the WORLD ..	5,025	—	—	—	—	—	4,691	—	—	—	—	—

\* Information for 1903 not available.  
† Included with other mines.  
‡ Kimberley Diamond Mines only.  
§ The accidents at coal mines relate to producing collieries only.  
|| No death-rate calculated for reasons given on page 356.  
¶ Revised figures.



**BRITISH EMPIRE and in FOREIGN COUNTRIES during the Years 1902 and 1903.**

\* Including accidents at Smelting Works.  
† This death-rate represents the persons insured in the mining and smelting branch of the German Official Insurance Association.  
‡ For true mining death-rates in Prussia see p. 416.  
§ Including Platinum Mines.  
|| other Mineral Workings.  
¶ The figures relate to 21 of the principal coal-producing States.

"	"	"	"	"	"	"	"
17	18	19	20	21	22	23	24



## BRITISH EMPIRE.

## GREAT BRITAIN AND IRELAND.

WITH THE

## ISLE OF MAN.

The following Tables, 281 to 286, summarize the results of Parts II. and III. of the General Report :—

TABLE 281.

PERSONS EMPLOYED at all the MINES during the Years 1902 and 1903.

Year.	Total Number of Mines at Work.	Under-ground.			Above-ground.			Total Under and Above Ground.
		Males.	Females.	Total.	Males.	Females.	Total.	
1902 .. ...	4,052	680,936	None	680,936	168,993	5,674	174,667	855,603
1903 ... ..	4,122	694,317	None	694,317	171,924	5,648	177,572	871,889
Increase or decrease ...	+ 70	+ 13,381	—	+ 13,381	+ 2,931	— 26	+ 2,905	+ 16,286

TABLE 282.

PERSONS EMPLOYED at QUARRIES more than 20 feet deep during the Years 1902 and 1903.

Year.	Total Number of Quarries at Work	INSIDE THE QUARRIES, i.e., inside the actual pits, holes, or excavations.			OUTSIDE THE QUARRIES, i.e., outside the actual pits, holes, or excavations.			Total Number of Persons Employed Inside and Outside the Quarries.
		Males.	Females.	Total Inside.	Males.	Females.	Total Outside.	
1902 ... ..	7,208	62,428	1	62,429	34,643	36	34,679	97,108
1903 ... ..	7,376	62,915	6	62,921	35,202	32	35,234	98,155
Increase or decrease	+ 168	+ 487	+ 5	+ 492	+ 559	— 4	+ 555	+ 1,047



GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—continued.

TABLE 283.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, and other WORKINGS.\*

Mineral.	1902.			1903.		
	Quantity.		Value at the Mines and Quarries.	Quantity.		Value Min Qu
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Alum shale ... ..	5,664	5,755	708	3,284	3,337	
Arsenic ... ..	2,181	2,165	19,322	902	916	
Arsenical pyrites ... ..	829	842	862	57	58	
Barytes ... ..	23,608	23,987	22,414	24,271	24,660	
Bauxite ... ..	9,047	9,192	2,679	6,128	6,226	
Bog ore ... ..	4,905	4,984	1,226	4,090	4,156	
Chalk... ..	4,395,673	4,406,213	193,757	4,469,974	4,541,706	
Chert and Flint ... ..	99,344	100,938	17,413	73,181	74,355	
Clay ... ..	15,304,136	15,549,731	1,758,884	16,198,021	16,457,960	1
Coal ... ..	227,095,042	230,739,359	93,521,407	230,334,469	234,030,784	88
Copper ore ... ..	5,662	5,753	14,715	6,428	6,531	
Copper precipitate ... ..	450	457	3,565	439	446	
Fluor spar ... ..	6,287	6,388	3,186	11,911	12,102	
Gold ore ... ..	29,953	30,434	12,621	28,600	29,059	
Gravel and Sand ... ..	2,067,745	2,100,927	157,741	2,245,757	2,281,796	
Gypsum ... ..	224,669	228,274	78,969	219,897	223,428	
Igneous Rocks ... ..	5,466,964	5,554,696	1,400,266	5,425,538	5,512,605	1
Iron ore ... ..	13,426,004	13,641,459	3,288,101	13,715,645	13,935,748	3
Iron pyrites ... ..	9,168	9,315	4,154	9,639	9,794	
Lead ore ... ..	24,606	25,001	175,962	26,567	26,993	
Limestone (other than Chalk) ... ..	12,172,851	12,368,196	1,382,132	12,222,971	12,419,120	1
Manganese ore ... ..	1,278	1,299	682	818	831	
Mica ... ..	8,542	8,679	3,047	13,197	13,409	
Natural gas ... ..	c. ft. 150,000	c. mts. 4,247	30	c. ft. 972,460	c. mts. 27,535	
Ochre, Umber, &c. ... ..	16,963	17,235	22,406	14,150	14,377	
Oil shale ... ..	2,107,534	2,141,355	500,804	2,009,602	2,041,851	
Petroleum ... ..	25	25	60	—	—	
Phosphate of lime ... ..	86	87	109	70	71	
Salt ... ..	1,893,881	1,924,273	577,383	1,886,992	1,917,274	
Sandstone ... ..	5,483,180	5,571,121	1,798,879	5,409,502	5,496,312	1,
Silver ore ... ..	—	—	—	58	59	
Slate ... ..	517,363	525,665	1,501,789	531,612	540,143	1,
Sulphate of strontia ... ..	32,281	32,799	32,281	22,842	23,209	
Tin ore (dressed) ... ..	7,560	7,681	513,872	7,332	7,500	
Uranium ore ... ..	52	53	2,023	6	6	
Wolfram ... ..	9	9	273	272	276	
Zinc ore ... ..	25,060	25,462	91,207	24,888	25,287	
Total values ... ..	—	—	107,104,884	—	—	101,84

\* This table does not include the produce of quarries less than 20 feet deep except in the case of bog ore, ochre, phosphate of lime, sulphate of strontia, and tin ore.

GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—continued.

TABLE 284.

SUMMARY of the METALS obtainable by SMELTING from the ORES in the preceding TABLE.

Metal.	1902.			1903.		
	Quantity.		Value at the Average Market Price.	Quantity.		Value at the Average Market Price.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Aluminium ... ..	(a)	—	(a)	(a)	—	(a)
Copper ... ..	482	490	27,321	536	545	33,790
Gold (Bar) ... ..	oss. 4,181	kilos. 130	14,570	oss. 5,495	kilos. 171	19,308
Iron ... ..	4,399,814	4,470,420	14,244,937	4,500,972	4,573,202	14,196,841
Lead ... ..	17,704	17,988	198,875	19,958	20,278	234,839
Silver ... ..	oss. 146,606	kilos. 4,560	14,737	oss. 174,891	kilos. 5,440	18,036
Sodium ... ..	550	559	79,500	(a)	—	(a)
Tin ... ..	4,392	4,462	532,292	4,282	4,351	544,122
Zinc ... ..	9,129	9,275	175,125	9,281	9,430	200,470
Total values ... ..	—	—	15,287,357	—	—	15,247,406

(a) Information not supplied.

TABLE 285.

FATAL ACCIDENTS and DEATHS at all the MINES during the Years 1902 and 1903.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate from Accidents.		
	Under- ground.	Above- ground.	Total.	Under- ground.	Above- ground.	Total.	Per 1,000 Persons employed Under- ground.	Per 1,000 Persons employed Above- ground.	Per 1,000 Persons employed Under and Above Ground.
1902 ... ..	328	120	948	933	120	1,053	1·37	·69	1·23
1903 ... ..	903	158	1 061	938	159	1,097	1·35	·90	1·26
Increase or decrease ...	+ 75	+ 38	+ 113	+ 5	+ 39	+ 44	— ·02	+ ·21	+ ·03

TABLE 286.

DEATHS from ACCIDENTS at QUARRIES\* during the Years 1902 and 1903.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate per 1,000 Persons employed.		
	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.
1902 ... ..	97	16	113	103	16	119	1·65	·46	1·23
1903 ... ..	79	11	90	84	11	95	1·34	·31	·97
Increase or decrease ...	— 18	— 5	— 23	— 19	— 5	— 24	— ·31	— ·15	— ·26

\* More than 20 feet deep.

## BRITISH COLONIES AND DEPENDENCIES.

## Aden.

Salt is made by the evaporation of sea-water, and the Government revenue is partly obtained from duty upon this product.

TABLE 287.

	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
Salt* ...	Statute Tons. 58,953	Metric Tons. 59,899	£ 23,361	Statute Tons. 71,656	Metric Tons. 72,806	£ 28,434

## Australia.

The principal mineral product of the Commonwealth of Australia is gold. The output in 1903 was 3,836,044 ozs. (119,314 kils.) of fine gold, or roughly speaking one-fourth of the total quantity raised in the world. The most productive of the six States is Western Australia, with an output exceeding two million ounces of fine gold or considerably more than twice as large as that of any one of its sisters. These in order of production may be arranged as follows:—Victoria, Queensland, New South Wales, Tasmania, and South Australia.

The Commonwealth is now producing over 7 million tons of coal annually; more than 89 per cent. of the total is furnished by New South Wales.

Tasmania is still the principal copper producing State, due mainly to the yield of the Mount Lyell district. New South Wales and South Australia however, owing to their increased output in 1903, do not come very far behind.

The famous mines at Broken Hill in New South Wales produce far more silver lead ore than all the other five States put together.

Full details concerning each individual State will be found under its own special heading.

TABLE 288.

PERSONS EMPLOYED at all MINES† in the COMMONWEALTH of AUSTRALIA during the Years 1902 and 1903.

State.	1902.			1903.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
New South Wales	‡	‡	33,695	‡	‡	37,559
Queensland ...	‡	‡	12,942	‡	‡	14,538
South Australia ...	‡	‡	7,350	‡	‡	7,283
Tasmania ...	‡	‡	5,934	‡	‡	6,017
Victoria ...	‡		27,479	‡	‡	25,669
Western Australia	9,793	11,417	21,210	9,815	11,791	21,606
Total ...	—	—	108,610	—	—	112,672

\* *Statistics of Mineral Production in India in the ten years 1894 to 1903.* Calcutta, 1904, p. 2.

† Including persons employed at alluvial gold workings.

‡ Not stated.



## AUSTRALIA—continued.

TABLE 289.

QUANTITY and VALUE of MINERAL produced in the COMMONWEALTH OF AUSTRALIA during the Years 1902 and 1903.

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alunite ... ..	3,644	3,702	10,932	2,485	2,525	6,212
Antimony and Antimony Ore.	56	57	542	40	40	415
Asbestos ... ..	—	—	—	owt. 4	kilos. 203	10
Bismuth ... ..	10	10	3,100	22	22	9,537
" Ore ... ..	1	1	123	11	11	2,523
Bluestone ... ..	79,144	80,414	9,601	50,662	51,475	7,133
Brown Coal ... ..	—	—	—	5,661	5,752	2,827
Chrome Iron Ore ...	500	508	1,740	1,951	1,982	7,342
Clays ... ..	—	—	13,000	—	—	14,500
Coal ... ..	6,858,453	6,988,514	2,662,455	7,109,343	7,223,430	2,636,113
Cobalt ... ..	36	37	345	153	155	1,570
Coke ... ..	126,872	128,903	89,605	160,592	163,169	108,764
Copper ... ..	23,321	23,695	1,296,315	23,721	24,101	1,494,655
" Ore, Matte and Regulus.	17,327	17,603	219,956†	35,022	35,583	313,145
Diamonds ... ..	carats 11,995	grams 2,464	11,326	carats 12,239	grams 2,514	9,987
Fireclay ... ..	5	5	11	—	—	—
Gems, other than opal ...	—	—	5,000	—	—	7,000
Gold (Fine) ... ..	ozs. 3,487,012	kilos. 108,458	14,812,001†	ozs. 3,836,044	kilos. 119,314	16,294,478
Gold Ore and Concentrates	—	—	—	22	22	154
Granite ... ..	2,770	2,814	1,095	4,271	4,340	905
Gypsum ... ..	3,227	3,279	3,630	3,590	3,648	897
Infusorial Earth... ..	400	406	2,000	400	406	2,400
Iron Ore ... ..	102,336	104,029	71,075	15,788	16,041	6,757
" Oxide of ... ..	188	191	395	1,194	1,213	1,182
Ironstone, Flux ... ..	18,355	18,650	12,730	22,340	22,699	15,922
Lead, Carbonate* ...	106	108	2,548	57	58	228
" Pig ... ..	6,447	6,550	70,119	7,963	8,091	90,796
Limestone.. ... ..	30,735	31,228	14,127	40,754	41,408	16,384
Manganese Ore ... ..	4,618	4,692	17,051	1,403	1,425	5,605
Molybdenite ... ..	15	15	1,841	29	29	4,458
Oil Shale ... ..	62,880	63,889	59,717	34,776	35,334	28,617
Opal ... ..	—	—	147,000	—	—	107,300
Platinum ... ..	ozs. 375	kilos. 12	750	ozs. 530	kilos. 16	1,061
Plumbago ... ..	1	1	6	—	—	—
Porphyry ... ..	26,713	27,142	3,262	29,204	29,673	1,383
Quicksilver ... ..	—	—	—	lbs. 1,010	kilos. 458	126
Salt ... ..	41,500	42,166	51,875	40,000	40,642	50,000
Sandstone ... ..	20,208	20,532	6,302	6,280	6,381	2,931
Silver ... ..	ozs. 1,899,512	kilos. 59,081	189,595	ozs. 1,945,497	kilos. 60,511	202,130
Silver Lead Ore ... ..	430,254	437,160	1,573,700	391,697	397,983	1,581,407
Tin Ingots ... ..	2,403	2,441	290,464	3,128	3,178	395,561
" Ore ... ..	2,865	2,910	159,430	5,276	5,362	341,406
Volcanic Ash ... ..	47,605	48,369	3,768	39,609	40,245	3,136
Wolfram ... ..	55	56	1,167	197	200	7,370
Zinc Ore ... ..	1,261	1,281	10,625	20,754	21,087	86,587
Sundries (including some Building Stone).	—	—	207,263†	—	—	213,673
Total ... ..	—	—	22,037,587†	—	—	24,085,087

\* Product of the leaching plants at Broken Hill, New South Wales.

† Revised figures.

ACCIDENTS at all MINES in the COMMONWEALTH of AUSTRALIA during the Years  
1902 and 1903.

State.	1902.		1903.	
	Number of Deaths from Accidents.	Death-rate per 1,000 persons employed.	Number of Deaths from Accidents.	Death-rate per 1,000 persons employed.
New South Wales ... ..	124	3·68	56	·96
Queensland ... ..	17	1·31	27	1·86
South Australia ... ..	*	*	*	*
Tasmania ... ..	5	·84	14	2·33
Victoria ... ..	34	1·24	22	·86
Western Australia ... ..	39	2·10†	43	2·36†
Total ... ..	219	2·07	142	1·39

NEW SOUTH WALES.‡

Coal and the ores of copper, gold, lead and silver are the principal minerals worked in this State.

*Coal.*—The existence of seams of coal was known in very early days and was the reason for the name of the State. It is reckoned that New South Wales has altogether yielded 109,741,916 tons of coal, valued at £44,021,103 of which more than 108 millions have been obtained since 1857. The output did not reach one million tons annually till the year 1871; last year it exceeded six millions. Over 2 million tons were exported to Australian Ports, and nearly 2 millions to places outside the Commonwealth, leaving 2½ millions available for home consumption.

Excluding lignite and seams of Triassic age, it is reckoned that the main coal-bearing rocks of the Colony extend over an area of 24,000 to 28,000 square miles around the seaport of Sydney.

*Copper.*—There was an increase of £122,263 in the value of the copper produced from ores raised in the State in 1903 as compared with the year 1902, mainly due to the mines at Cobar and Burruga. The principal mine at the present time is at Cobar.

*Diamonds.*—Diamonds are found in several parts of the Colony; but the bulk of those obtained in 1903 came from the deposits in the Tingha Division.

*Gold.*—The quantities of gold in Table 292 relate only to metal obtained from ores mined in the State; in previous years the returns included some gold from imported ores. There was an increase of 105,462 ozs. of crude gold, equal to 93,005 ozs. fine, in the output of 1903 compared with 1902. The most important gold-yielding districts in 1903 were Bathurst, Cobar, Lachlan, Mudgee, Peel and Uralla, Southern, and Tumut and Adelong.

Dredging for gold was continued in 1903. There were several "bucket" and "suction" dredges at work during the year, and the quantity obtained thereby was 27,237 ozs. The chief centre of the gold-dredging operations is in the Araluen Division, where 14,448 ozs. were obtained in 1903.

*Silver and lead.*—In the value of silver and silver-lead ores there was a slight increase, £61,224, attributable to the advance in the price of the metals. The silver and lead mining of the Colony is practically concentrated at Broken Hill, in the Albert Mining District.

*Tin ore.*—The chief supply of tin ore is obtained from the stanniferous gravels. 244 tons, valued at £20,100 were obtained by means of dredging during the year. The workings for lode tin are principally carried on at Silent Grove in the Deepwater Division.

\* Not stated.

† Exclusive of alluvial gold workers.

‡ *Annual Report of the Department of Mines for 1903*: Sydney, 1904.

AUSTRALIA.—NEW SOUTH WALES—*continued.*

TABLE 291.

PERSONS EMPLOYED at all MINES during the Years 1902 and 1903.\*

Kind of Mines.	1902.			1903.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	10,050	2,765	12,815	10,910	3,007	13,917
Copper ... ..	—	—	1,699	—	—	1,816
Gold {	alluvial ...	—	5,434	—	—	5,906†
	quartz ...	—	5,176	—	—	5,341
Shale ... ..	202	97	299	138	62	200
Silver, Lead and Zinc.	—	—	5,382	—	—	6,035
Tin... ..	—	—	1,288	—	—	2,502‡
Other mines ...	—	—	1,602	—	—	1,842
Total ... ..	—	—	33,695	—	—	37,559

TABLE 292.

QUANTITY and VALUE of MINERALS produced during the Years 1902 and 1903.§

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alunite ... ..	3,644	3,702	10,932	2,485	2,525	6,212
Antimony and Antimony ore ...	56	57	542	13	13	135
Bismuth ... ..	10	10	3,100	22	22	9,537
Chrome iron ore ... ..	500	508	1,740	1,951	1,982	7,342
Coal ... ..	5,942,011	6,037,366	2,206,598	6,354,846	6,456,826	2,319,660
Cobalt ... ..	34	35	304	153	155	1,570
Coke ... ..	126,872	128,908	89,605	160,592	163,169	108,764
Copper (ingots) ... ..	4,945	5,024	256,802	5,631	5,721	314,473
" (ore and regulus)... ..	3,850	3,912	52,121	3,570	3,627	116,713
Diamonds ... ..	carats 11,995	grams 2,464	11,326	carats 12,239	grams 2,514	9,987
Fireclay (exported) ... ..	5	5	11	—	—	—
Gold (fine)  ... ..	ozs. 161,255	kilos. 5,016	684,970	ozs. 254,260	kilos. 7,908	1,080,029
Iron stone flux¶ ... ..	13,555	13,773	10,690	22,120	22,475	15,834
Iron, oxide of (exported) ... ..	188	191	395	1,194	1,213	1,182
Lead (pig)** ... ..	4,505	4,577	45,110	3,448	3,503	38,358
" (carbonate)†† ... ..	106	108	2,548	57	58	228

\* Annual Report of the Department of Mines for 1902, pp. 4 and 87; and for 1903, pp. 4 and 79.

† Including 391 Chinese.

‡ 302

§ Annual Report of the Department of Mines for 1903, pp. 2, 9, 33, 39, 45, 49, and 51.

|| The quantities of Crude gold were 190,316 ozs. in 1902, and 295,778 ozs. in 1903. The figures in 1902 have been amended so as to show only the metal obtained from ores raised in the State.

¶ Used for metallurgical works.

\*\* See footnote on p. 312 as to total quantity of metallic lead.

†† The lead carbonate is a product of the leaching plants at Broken Hill.



AUSTRALIA.—NEW SOUTH WALES—continued.

TABLE 292—continued.

Mineral.	1902			1903.		
	Quantity.		Value.	Quantity.		Val
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Limestone (flux) ... ..	17,352	17,630	10,615	23,924	24,208	41
Manganese ore ... ..	—	—	—	73	74	
Molybdenite ... ..	15	15	1,841	29	29	
Oil shale ... ..	62,880	63,889	59,717	34,776	35,334	21
Opal ... ..	—	—	140,000	—	—	104
Platinum ... ..	ozs. 375	kilos. 12	750	ozs. 530	kilos. 16	1
Quicksilver ... ..	—	—	—	lbs. 1,010	Kilos. 458	
Silver (ingots and matte)* ...	ozs. 1,067,224	kilos. 33,194	105,360	ozs. 1,099,373	kilos. 34,194	115
Silver lead and ore* ... ..	381,059	387,174	1,334,819	349,064	354,666	1,387
Tin (ingots) ... ..	445	452	52,636	752	764	95
„ ore ... ..	23	23	1,070	547	556	24
Zinc (Metal and concentrates)*...	1,261	1,281	10,625	20,754	21,087	84
Sundry minerals (including building stone, &c.).	—	—	148,115	—	—	165
Total value ... ..	—	—	5,242,342	—	—	6,059,

TABLE 293.

DEATHS from ACCIDENTS at all MINES during the Years 1902 and 1903.†

Kind of Mines.	1902.		1903.	
	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.
Coal and shale ...	105	8·01	13	·92
Gold { alluvial ...	4	·74	1	·17
{ quartz ...	1	·19	6	1·12
Silver Lead and Zinc	12	2·23	14	2·32
Other mines... ..	2	·44	2	·32
Total ... ..	124	3·68	36	·96

TABLE 294.

DEATHS from ACCIDENTS at COAL and SHALE MINES during the Years 1902 and 1903.

Year.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
1902 ... ..	102	3	105	9·95	1·05	8·01
1903 .. ..	10	3	13	·91	·98	·92

\* The total metallic contents of the ores of Lead, Silver, and Zinc raised in the state during the year are given on page 40 of the Annual Report of the Department of Mines for 1903 as follows:—Fine Silver 8,226,201ozs., Lead 121,999 Zino 14,911 tons.  
† Annual Report of the Department of Mines for 1902, pp. 5, 66, and 67, and 1903, pp. 5, 65, and 90.  
‡ " " for 1902, pp. 91 and 92, and for 1903, pp. 86 and 87.

AUSTRALIA.—QUEENSLAND—continued.

TABLE 296.

PERSONS EMPLOYED at MINES during the Years 1902 and 1903.\*

Kind of Mines.	1902.	1903.
Coal       ...       ...       ...	1,336	1,329
Gold { alluvial ...       ...       ...	1,916†	1,951‡
{ vein       ...       ...       ...	7,129	7,278
Other mines       ...       ...       ...	2,561	3,980
Total       ...       ...       ...	12,942	14,538

TABLE 297.

QUANTITY and VALUE of MINERALS produced during the Years 1902 and 1903.§

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Bismuth ore ... ..	1	1	123	11	11	2,523
Bismuth, Wolfram, and Molybdenite.	41	42	5,502	24	24	2,100
Coal ... ..	501,531	509,579	172,286	507,801	515,950	164,798
Copper ... ..	3,784	3,845	189,200	4,916	4,995	285,122
Gems, other than Opal ... ..	—	—	5,000	—	—	7,000
Gold (fine)  ... ..	ozs. 640,463	kilos. 19,921	2,720,639	ozs. 668,546	kilos. 20,794	2,839,813
Iron ore ¶ ... ..	—	—	—	9,808	9,965	3,852
Lead ... ..	267	271	2,706	3,795	3,856	43,639
Manganese ore ... ..	4,600	4,674	16,989	1,320	1,341	5,332
Opal ... ..	—	—	7,000	—	—	7,300
Silver ... ..	ozs. 701,312	kilos. 21,813	70,145	ozs. 642,125	kilos. 19,972	65,538
Stone** :—						
Bluestone ... ..	79,144	80,414	9,601	50,662	51,475	7,133
Granite ... ..	2,770	2,814	1,095	4,271	4,340	905
Limestone ... ..	8,303	8,430	2,172	15,650	15,901	1,985
Porphyry ... ..	26,713	27,142	3,262	29,204	29,673	1,383
Sandstone ... ..	20,208	20,532	6,302	6,280	6,381	2,931
Volcanic Ash ... ..	47,605	48,360	3,768	39,609	40,245	3,136
Other ... ..	—	—	—	5,285	5,370	1,001
Tin ore (dressed) ... ..	2,085	2,118	116,171	3,708	3,765	243,149
Wolfram ... ..	55	56	1,167	197	200	7,870
Total value ... ..	—	—	3,333,128	—	—	3,696,510

\* Annual Report of the Under Secretary for Mines for the year 1903, Brisbane, 1904, p. 21.  
† Including 560 Chinese.  
‡ 494  
§ Op. cit., pp. 17, 19 and 20.  
|| The quantities of crude gold were 860,453 ozs. in 1902 and 921,363 ozs. in 1903.  
¶ Used principally for fluxing purposes.  
\*\* Statistics of Queensland for 1903, Brisbane, 1904.

AUSTRALIA.—QUEENSLAND—*continued.*

TABLE 298.

DEATHS from ACCIDENTS at MINES during the Years 1902 and 1903.\*

Kind of Mines.	1902.		1903.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal ... ..	1	·75	—	—
Gold ... ..	13	1·44	18	1·95
Other mines ...	3	1·17	9	2·26
Total ... ..	17	1·31	27	1·86

*Iron Bonus Commission.*—A Royal Commission was appointed by the Federal Government in the early part of the year 1903 to inquire into the provisions of the Bill relating to Bonuses for the Encouragement of the Manufacture of Iron and Steel in Australia. It appears from the evidence given before the Commission that there are numerous valuable deposits of iron ore in the State of Queensland.†

## SOUTH AUSTRALIA.‡

There are no records in the Mines Department affording information as to the number of deaths from accidents in South Australia proper, which, however, is known to be very small. It is estimated that during the year 1903 6,000 persons were engaged in mining in that division of the State, and principally for copper and gold. Of the 1,283 persons engaged in mining in the Northern Territory, nearly 94 per cent. were Chinese.

*Copper.*—Copper ore is by far the most important mineral of this State. It is obtained chiefly from mines in Yorke's Peninsula in South Australia proper.

*Gold.*—Compared with that of the other Australian States, the output of gold is at present insignificant. More than 70 per cent. of it comes from the Northern Territory.

*Salt.*—The salt produced in 1903 was obtained from Yorke's Peninsula.

TABLE 299.

PERSONS EMPLOYED at MINES during the Years 1902 and 1903.

—	Average Number of Persons Employed in and about the Mines during the years	
	1902.	1903.
South Australia proper ... ..	6,050§	6,000§
Northern Territory... ..	1,300	1,283
Total ... ..	7,350	7,283

It is estimated that 300 persons were employed at quarries in 1903.

\* *Annual Report of the Under Secretary for Mines for the year 1903*, Brisbane, 1904, pp. 2 and 122.

† *Op. cit.* p. 14.

‡ *Official Return furnished by Department of Mines, Adelaide, and Government Resident's Report on the Northern Territory for the year 1903.*

§ Approximate.



AUSTRALIA.—SOUTH AUSTRALIA—continued.

TABLE 300.  
QUANTITY and VALUE of MINERALS produced during the Years 1902 and 1903.

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Copper ... .. (exported)	6,847	6,957	388,162	6,490	6,584	417,037
Copper ore ... ..	2,721*	2,763	44,363	7,072*	7,185	54,977
Gold (fine)† ... ..	ozs. 22,395*	kilos. 696	95,129*	ozs. 21,195*	kilos. 659	90,031
Gold ore and concentrates ...	—	—	—	22*	22	154
Iron ore for fluxing ... ..	100,000	101,605	70,000	—	—	—
Lead ... .. (exported)	1,675	1,702	22,303	720	732	8,799
Manganese ore ... ..	18	18	62	10	10	19
Salt ... ..	41,500	42,166	51,875	40,000	40,642	50,000‡
Silver ... .. (exported)	—	—	—	ozs. 7,086	kilos. 220	804
Silver lead ore... ..	2,679	2,723	19,740	211	214	1,267
Tin ore ... ..	127*	129	1,906	171*	174	10,772
Unenumerated ore ... ..	—	—	251	—	—	81
Total value ... ..	—	—	698,791	—	—	633,941

TASMANIA§.

Tasmania produces a little coal, but its importance at the present moment as a mineral country is due to its great deposits of the ores of copper, lead, gold, silver, and tin.

*Coal.*—The total output is small, amounting only to 49,069 tons during the year 1903. The Cornwall and Mount Nicholas collieries are the largest producers. Attempts are now being made to open up several new seams which have lately been discovered in various parts of the State.

*Copper.*—Mount Lyell Mine in the West Coast district is the great producer of copper and the ore is made specially valuable by containing gold and silver. The Mount Lyell ore yielded 6,684 tons of blister copper in the year 1903.

*Gold.*—In addition to the deposits of auriferous copper ore of Mount Lyell and its neighbours, there are numerous veins of gold-bearing quartz, which occur principally in the northern and eastern parts of the Island. The most important mines are the Tasmania in the Beaconsfield district, and the New Golden Gate in the Mathinna district.

*Lead and Silver.*—There are many rich deposits of silver-bearing lead ore in the Zeehan and North-western districts. The Tasmania Smelting Co. at Zeehan treated last year 26,212 tons of ore, which contained 7,793 tons of lead, 1,148,903 ozs. of silver, and 3,941 ozs. of gold.

*Tin.*—As in the case of its competitor Cornwall, it was tin ore which first drew special attention to the mineral wealth of the country. The total value of the output for 1903, £300,098, exceeded that of the gold. Mount Bischoff still ranks as one of the largest tin mines in the world, its output during the year ended December, 1903, was 1,332 tons.

\* Including output of Northern Territory.  
† The quantities of crude gold were 28,212 ozs. in 1902 and 27,829 ozs. in 1903.  
‡ Estimated.  
§ Official Return furnished by the Department of Mines, Hobart.

AUSTRALIA.—TASMANIA—continued.

TABLE 301.

PERSONS EMPLOYED at the MINES during the Years ended 31st December 1902 and 1903.

	1902.	1903.
	5,934	6,017

TABLE 302.

QUANTITY and VALUE of the MINERALS produced during the Years ended 31st December 1902 and 1903.

Description of Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal ... ..	48,863	49,647	41,533	49,069	49,856	41,709
Copper (blister) ... ..	7,745	7,869	462,151*	6,684	6,791	478,023*
„ (matte) ... ..	2,500†	2,540†	50,112†	3,727	3,787	83,624
„ ore ... ..	5,994	6,090	65,270	102	104	790
Gold (Fine) ... ..	oss. 70,996	kilos. 2,208	301,573	oss. 59,891	kilos. 1,863	254,403
Iron ore ... ..	2,386	2,424	1,075	5,980	6,076	2,905
Silver lead ore ... ..	46,480	47,226	218,864	42,422	43,103	192,492
Tin (exported) ... ..	1,958	1,989	237,828	2,376	2,414	300,098
Total value ... ..	—	—	1,378,406†	—	—	1,354,044

TABLE 303.

DEATHS from ACCIDENTS at MINES during the Years ended 31st December 1902 and 1903.

	1902.		1903.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
	5	·84	14	2·33

\* Value of the gold contained in the blister copper has been deducted.  
† Revised figures.

AUSTRALIA—continued.

VICTORIA.\*

*Coal.*—Victoria possesses large deposits of brown coal of Tertiary age. Up to the present time they have been little utilised. The output for 1903 shows a decrease of 155,303 tons, compared with that of the previous year, but this reduction is accounted for by a strike which lasted the greater part of the year.

*Gold.*—The State with a yield of 767,351 ozs. of fine gold in 1903, stands second in the Commonwealth as a gold producer. It is true that the weight of its bar gold was less than that of Queensland; but much of the gold from the latter colony has a comparatively low standard of fineness, so that when its output is reduced to fine gold it falls behind Victoria.

TABLE 304.  
PERSONS EMPLOYED at MINES during the Years 1902 and 1903.

					1902.	1903.
Coal ... ..					1,303	377
Gold ... ..					26,103	25,208
Other Mines ... ..					73	84
Total ... ..					27,479	25,669

TABLE 305.  
QUANTITY and VALUE of the MINERALS produced during the Years 1902 and 1903.

Mineral.	1902			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons. 5	Metric Tons. 5	£
Antimony ore ... ..	—	—	—	—	—	50
Brown coal ... ..	—	—	—	5,661	5,752	2,827
Building stone ... ..	—	—	53,395†	—	—	42,649
Clays ... ..	—	—	13,000	—	—	14,500
Coal ... ..	225,164	228,777	155,850	64,200	65,230	40,818
Copper ore ... ..	—	—	—	25	25	500
Gold (fine) ... ..	ozs. 720,866	kilos. 22,421	3,062,028	ozs. 767,351	kilos. 23,867	3,259,483
Gypsum ... ..	3,227	3,279	3,630	3,590	3,648	897
Infusorial earth ... ..	400	406	2,000	400	406	2,400
Silver ... ..	ozs. 47,683	kilos. 1,483	4,900	ozs. 28,800	kilos. 896	2,880
Tin ore ... ..	10	10	500	33	34	2,165
Total value ... ..	—	—	3,295,303†	—	—	3,369,169

\* Annual Reports of the Secretary for Mines for Victoria for 1902 and 1903, Melbourne 1903 and 1904.  
† Revised figures.



AUSTRALIA.—VICTORIA—continued.

TABLE 306.

DEATHS from ACCIDENTS at MINES during the Years 1902 and 1903.

Kind of Mines.	1902.		1903.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal ... ..	1	1·77	1	2·65
Gold ... ..	33	1·26	21	·83
Total ... ..	34	1·24	22	·86

WESTERN AUSTRALIA.\*

A map of the State, prepared by Mr. Maitland, the Government Geologist, and pre-  
facing the Report of the Department of Mines, shows by coloured signs the distribution  
of the various useful minerals which have been discovered, viz. :—Aluminium, antimony,  
asbestos, bismuth, coal, cobalt, copper, diamonds, diatom earth, gold, graphite, guano,  
iron, lead, manganese, mica, silver, and tin.

*Coal.*—The output of the only coalfield, that at Collie, was 133,427 tons in 1903,  
a decrease of 7,457 tons compared with 1902. This decrease was due to a temporary  
closing of the Collie Proprietary Mine, in consequence of labour disputes.

*Copper Ore.*—The quantity produced during the year 1903 was 20,526 tons, or  
18,264 tons more than the preceding year.

Both the Mount Malcolm district and the Phillips River Goldfields show considerable  
increases in their output. In the case of the former the increase is attributed to the  
amount of development work done in the previous year, which enabled smelting  
operations to be carried on without interruption ; in the case of the latter it is due to  
an arrangement made by the Department of Mines, by which lease-holders' ore is now  
purchased on assay value prior to smelting, and which acts as an inducement to owners  
to work their properties.

*Gold.*—The output of gold has increased by 10·36 per cent., and for the first time  
has exceeded two million ounces. The average yield for the whole State per ton of ore  
milled was 1·07 ozs. as against 1·10 ozs. for the previous year. More than half the gold  
was produced by the East Coolgardie Field, with a total output of 1,275,628 ozs. ;  
next in importance comes the Murchison Field with 241,791 ozs., followed by the Mount  
Margaret Field with an output of 212,491 ozs. The North Coolgardie Goldfields pro-  
duced 195,427 ozs.

The number of gold-producing mines in the State in 1903 was 1,105.

*Tin Ore.*—The output for the year shows an increase of 197 tons, and the value  
an increase of £16,107 on the figures for 1902. The two producing districts are  
Greenbushes and Pilbarra.

\* Reports of the Department of Mines of Western Australia for the Years 1902 and 1903. Perth, 1903 and 1904.

AUSTRALIA.—WESTERN AUSTRALIA—continued.

TABLE 307.

PERSONS EMPLOYED at MINES, ALLUVIAL GOLD, and STREAM TIN WORKINGS during the Years 1902 and 1903.

Kind of Mines.	1902.			1903.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	284	84	368	308	94	402
Copper Ore ... ..	60	53	113	98	95	193
Gold {	9,390	8,435	17,825	9,349	7,980	17,329
		2,651	2,651		3,387	3,387
Lead Ore ... ..	—	2	2	—	—	—
Limestone ... ..	—	2	2	—	1	1
Tin ... ..	59	190*	249	60	234*	294
Total ... ..	9,793	11,417	21,210	9,815	11,791	21,606

TABLE 308

QUANTITY and VALUE of the MINERALS produced during the Years 1902 and 1903.

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Antimony (exported) ...	—	—	—	22	22	230.
Asbestos „ ... ..	—	—	—	cwt. 4	kilos. 203	10.
Coal ... ..	140,884	143,145	86,188	133,427	135,568	69,128.
Cobalt ore (exported) ...	2	2	41	—	—	—
Copper ore ... ..	2,262	2,298	8,090	20,526	20,855	56,541
Gold (fine)† ... ..	ozs. 1,871,037	kilos. 58 196	7,947,662	ozs. 2,064,801	kilos. 64,223	8,770,719
Ironstone for fluxing ...	4,800	4,877	2,040	220	224	88
Limestone ... ..	5,080	5,162	1,340	1,230	1,301	178
Plumbago ore (exported) ...	1	1	6	—	—	—
Salt ... ..	‡	—	—	‡	—	—
Silver (exported) ... ..	ozs. 82,293	kilos. 2,591	9,190	ozs. 168,113	kilos. 5,229	19,153
Silver lead ore ... ..	36	37	277	—	—	—
Tin ore (dressed) ... ..	620	630	39 783	817	830	55,890
Total value ... ..	—	—	8,094,617	—	—	8,971,937

\* As the tin obtained is principally "stream tin" the average number of alluvial workers is included under the heading above ground.  
† The quantities of crude gold were 2,177,441 ozs. in 1902, and 2,436,311 ozs. in 1903.  
‡ Information not received.

AUSTRALIA.—WESTERN AUSTRALIA—continued.

TABLE 309.

DEATHS from ACCIDENTS at MINES during the Years 1902 and 1903.

Kind of Mines.	1902.						1903.					
	Number of Persons Killed.			Death-rate per 1,000 Persons Employed.			Number of Persons Killed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	—	—	—	—	—	—	1	—	1	3·25	—	2·49
Gold ... ..	30	9	39	3·19	1·07*	2·19*	34	7	41	3·64	·88*	2·37*
Other mines ... ..	—	—	—	—	—	—	1	—	1	6·33	—	2·05
Total for all mines	30	9	39	3·06	1·08*	2·10*	36	7	43	3·77	·83*	2·36*

A consolidating Act has been passed, entitled The Mining Act, 1904,† which came into force on the 1st March, 1904. It embodies the Goldfields Act, the Mineral Lands Act, and the Mining on Private Property Act. One of its principal provisions provides for private property being thrown open to mining for minerals other than gold after certain conditions have been complied with.

West Indies. (See BARBADOS, DOMINICA, REDONDA and TRINIDAD.)

Bahamas.‡

Bay salt is produced in the Bahamas by the solar evaporation of sea water. The principal producers are Inagua, Rum Cay, and Ragged Island. During the year 1903 the number of persons employed temporarily was about 354.

The output during the last two years has been as follows :—

TABLE 310.

Year.	Quantity.		Value.
	Statute Tons.	Metric Tons.	
1902	2,265	2,300	£ 1,085
1903	1,377	1,400	602

Barbados.§

The most important mineral product of the island is “manjak,” a variety of glance pitch occurring in veins which traverse deposits of infusorial earth. The quantity exported in 1902 was 868 tons, valued at £7,817, and in 1903 650 tons valued at £6,508.

There are several wells yielding petroleum.

\* Exclusive of alluvial gold workers.  
† Western Australia. Report of the Department of Mines for the year 1903. Perth, 1904, p. 35.  
‡ Official Return furnished by the Colonial Secretary, Nassau.  
§ Knaggs, “Barbados. Report for 1902,” and Hodgson, “Barbados. Report for 1903.” Colonial Reports—Annual No. 398—London 1903 [Cd. 1768-3], p. 9 and No. 432.—London, 1904 [Cd. 2,238-9], pp. 8 and 11.



Basutoland.

According to Sir Godfrey Lagden,\* “Coal crops out in several places in Basutoland and is used for local consumption. . . . There are indications of iron, copper, and tin.”

Bechuanaland Protectorate.†

Little is known about the mineral wealth of this country ; though a small seam of good coal has been discovered close to the railway in the Northern Protectorate. Gold mines are reported to exist in the Tati district and there are prospects of mining being resumed before long on some of the properties.

British Borneo.

LABUAN.‡

The Labuan Coalfields Company, Ltd., which purchased the Labuan Coalfields at the end of the year 1902, are now engaged in extensively developing a seam nine feet thick at Coal Point, and it is expected that the output for the island will in future be largely augmented.

During the last three or four years all the coal produced has been sold at Victoria Harbour, Labuan, for steamships calling there for bunker supplies. The average selling price of the coal during the year 1902 was 17s. 6d. per ton, and in 1903 17s. 0d. per ton.

Between 400 and 500 Chinese, Malays, and Klings are employed in the mines at Coal Point, and from 50 to 60 in coaling operations at Victoria.

The quantities of coal produced in 1902 and 1903 were as follows :—

TABLE 311.

	Year.	Quantity.		Value.
		Statute Tons.	Metric Tons.	
	1902	16,642	16,909	£ 14,562
	1903	18,844	19,146	16,017

NORTH BORNEO.§

The existence of coal, iron, manganese, gold, and other minerals has been proved ; gold has from time immemorial been worked by the natives in the vicinity of Darvel Bay. Coal has been discovered in Marudu Bay, and the coalfield in the vicinity of Cowie Harbour has been proved to contain two workable seams. One of them, which is six feet six inches thick, has been traced along its outcrop for a distance of six miles, and mining operations have been commenced in the Tawao district.

\* *Jour. R. Col. Inst.*, Vol. xxxii., 1901, p. 462.  
† Newton, “Bechuanaland Protectorate Annual Reports for 1896-7.” *Colonial Reports*—Annual, No. 226.—London, 1898 [C. 8560-24], p. 8, and Panzera “Bechuanaland Protectorate Report for 1902-1903 and 1903-1904.” *Colonial Reports* Annual, No. 440.—London, 1904 [Cd. 2238-17], p. 6.  
‡ Information furnished by the Labuan Coalfields Company, Ltd.  
§ Information furnished by the British North Borneo Company, and The Singapore and Straits Directory for 1904, Singapore, 1904, p. 368.

BRITISH BORNEO—*continued*.

## SARAWAK.\*

The known mineral resources of Sarawak are deposits of antimony ore, coal, diamonds, gold, and petroleum.

*Antimony*.—The Borneo Company has antimony works at Busoh in Upper Sarawak, but very little work is being done.

*Coal*.—The Government works two coal mines, one at Sadong, which produced 15,547 tons in 1903, and the other at Brooketon, which produced 15,411 tons in the same year.

*Diamonds*.—The gems are found in very small quantities.

*Gold*.—The Borneo Company, Ltd., is successfully extracting large quantities of gold by the cyanide process from auriferous quartz, gravel and clay containing only about 5 dwts. per ton. The output of fine gold in 1903 was about 45,000 ozs. as against 32,000 ozs. in the previous year.

## British Central Africa Protectorate.†

From the discoveries which have been made of coal, copper, gold, iron, lead, silver, &c., the Protectorate appears to be rich in mineral deposits.

The coal is stated to be similar in character to the Gondwana coal of India. Specimens from Deep Bay, in the Karonga district, are reported as non-caking and of fair quality. It is estimated that in the West Shiré district the coalfields are 3,000 square miles in extent.

Copper ore exists in the Ruo, Lower Shiré, and Shiré Highlands districts.

There are deposits of auriferous quartz in the Shiré Highlands, but at present none of these have been proved to contain more than 5 dwts. of gold per ton.

A lode of argentiferous galena has been found in Angoniland, which is stated to contain 81 per cent. of lead and 26 ozs. of silver per ton of ore.

## British Columbia. (See under CANADA.)

## British Guiana.‡

*Diamonds*.—The production of diamonds of good quality has continued throughout the year—164,315 stones, weighing 10,742 carats and valued at £21,484, were declared at the Department of Lands and Mines, Georgetown. The greater portion of these stones came from the Mazaruni River, and were obtained by primitive methods of washing. The Potaro River, with its tributary the Kuribrong, continues to attract attention.

*Gold*.—The production for the year was 90,336 ozs. of alluvial gold, showing a decrease of 14,189 ozs. on the previous year's production.

The hydraulic plant at Omai on the Essequibo River which started work in July, 1902, continued operations throughout the year 1903 and produced 4,567 ozs. of gold (bullion), equal to 4,392 ozs. of fine gold. The output would have been greater but for frequent breakdowns of the pumping machinery, which prevented continuous work.

The gold dredger formerly at work on the Barima River has been removed and re-erected at Gilt Creek, Omai.

Development work was started again on the Arakaka Creek in 1903.

\* Consul Hewett, "Trade and Commerce of Sarawak for the Year 1902."—*Dipl. and Cons. Reports*, No. 3,096, Ann. Ser., 1903 [Cd. 1,766-30], and information furnished by the Borneo Company, Ltd.

† Commissioner Sharpe, "Trade and General Condition of British Central Africa Protectorate for the Year 1903-1904."—[Cd. 2242], 1904, pp. 17 and 18.

‡ Official Return furnished by the Department of Lands and Mines, Georgetown: *British Guiana, Report of the Commissioner of Mines for the year 1903-1904*. George Town: Demerara, 1904; and Hodgson, "British Guiana Report for 1903-4," *Colonial Reports*—Annual No. 441.—London, 1904.

## BRITISH GUIANA—continued.

TABLE 312.

PERSONS EMPLOYED at MINES, ALLUVIAL WORKINGS, and QUARRIES during the Years 1902-1903 and 1903-1904.

Kind of Workings.	1902-1903.	1903-1904.
Mines and Alluvial or Placer Diggings ...	11,385 (a)	12,003 (a)
Granite Quarries ... ..	27	22

(a) Approximate figures, and relate to the number of men registered.

TABLE 313.

QUANTITY and VALUE of the MINERALS produced in 1902-1903 and 1903-1904.

Mineral.	Financial Year 1902-1903.			Financial Year 1903-1904.		
	Quantity.		Value.	Quantity.		Value.
Diamonds ... ..	Carats. 10,446	—	£ 20,892	Carats. 10,742	—	£ 21,484
Gold ... ..	Ozs. 104,525	Kilos. 3,251	381,080	Ozs. 99,336	Kilos. 2,810	329,350
Granite ... ..	Statute Tons. 3,281	Metric Tons. 5,384	2,050	Statute Tons. 2,754	Metric Tons. 2,798	1,721
Total value ... ..	—	—	404,022	—	—	352,555

The table below shows the output of the principal districts :—

TABLE 314.

Gold obtained.

District.	Financial Year 1902-1903.	Financial Year 1903-1904.
Barima ... ..	Ozs. 24,079	Ozs. 22,279
Barama ... ..	10,370	7,663
Cuyuni ... ..	21,802	16,867
Demerara ... ..	42	244
Essequebo ... ..	12,481	12,380
Groote Creek ... ..	1,649	1,153
Mazaruni ... ..	3,124	2,297
Potaro ... ..	20,991	18,542
Puruni ... ..	9,987	8,911
Total output in ozs. ...	104,525	90,336
„ „ kil. ...	3,251	2,810



TABLE 315.  
DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1902-1903  
and 1903-1904.

Kind of Workings.	1902-1903.		1903-1904.	
	Persons Killed.	Death-rate per 1,000 Persons employed.	Persons Killed.	Death-rate per 1,000 Persons employed.
Gold mines ... ..	6	·53	4	·33
Alluvial or Placer diggings ...				
Granite quarries ... ..	—	—	—	—

In 1903 a Mining Ordinance was passed to consolidate and amend the law with regard to mining for gold and diamonds. Formerly the Mining law was contained in no less than seven Ordinances.

British New Guinea.\*

There are several goldfields in the Possession, viz., Louisiade, Sudest and Misima Islands, Gira, Yodda, Murua or Woodlark Island, Milne Bay, Cloudy Bay, and Musa River, which give employment to between 200 and 300 persons. The output of gold for the year ended 30th June, 1903, judging by the Customs returns of the quantity exported, which do not show a complete record of all the gold that leaves the Possession, was lower than that of the preceding year.

A small quantity of mica valued at £10 was exported from Samarai during the year 1902-1903.

TABLE 316.

Year.	Gold exported.		Value.
	Ozs.	Kil.	£
1900-1901	9,188	286	32,646
1901-1902	11,881	370	42,214
1902-1903	11,537(a)	359	40,323

(a) In addition 49 tons of gold ore and concentrates valued at £816 were exported.

British Solomon Islands.†

Copper ore is known to exist in the Island of Rendova, and a concession has been granted for working sulphur in the Island of Vella Lavella.

Canada.‡

*Asbestos.*—The Canadian asbestos, which mineralogically is chrysotile, occurs in considerable quantities in the form of small veins in intrusive serpentine, in the Eastern Townships of the province of Quebec, and at various points north of Ottawa in association with serpentinous rocks in the Laurentian formation. The whole of the quantity obtained in 1903 came from Quebec.

*Chromic Iron Ore.*—This ore is obtained from irregular pockets in the intrusive serpentines of the Eastern Townships of the province of Quebec.

*Coal.*—The coalfields, which have been most largely developed, are situated on the seaboard of the Atlantic and Pacific Oceans, and are therefore of no small importance from an Imperial point of view. On the Atlantic side of the continent, bituminous coal

\* *Annual Report on British New Guinea for 1902-1903.*  
† Woodford, "British Solomon Islands Annual Report for 1901-1902." *Colonial Reports*, Annual, No. 372 [Cd. 788-42]. London, 1902, p. 16.  
‡ *Reports of the Division of Mineral Statistics and Mines of Canada for the years 1902 and 1903.* Ottawa.

## CANADA—continued.

is being mined from thick seams of true Carboniferous age at the Sydney (Cape Breton), Pictou, and Springhill coalfields, in Nova Scotia. New Brunswick has a small area of thin seams of bituminous coal. The coal of the Pacific coast, generally bituminous, is of Cretaceous age, and is derived from collieries at Nanaimo, Wellington, and Comox, in Vancouver Island. Anthracite and bituminous coal occur in Queen Charlotte Islands.

In the interior of the Dominion no coal is found between the Atlantic seaboard and the prairies of the West, where great quantities of lignite exist. At Lethbridge the seams are worked on a large scale. On approaching the Rocky Mountains, the seams occurring near Cochrane improve in quality, and yield bituminous coal. Further west again is the Cascade coalfield, in the vicinity of Banff, one of the well-known pleasure resorts of the Rocky Mountains, where the coal has become converted into semi-anthracite and anthracite.

Thick seams of good bituminous coal and semi-anthracite have long been known to exist in the vicinity of the Crow's Nest Pass, and this store of valuable fuel is now being worked on a large scale. All these coals are of Cretaceous age.

In 1903 the output of coal in the Dominion exceeded 7 million tons, of which Nova Scotia produced 74 per cent., British Columbia 17·8 per cent., and the North-West Territories, together with New Brunswick, 8·2 per cent.

*Copper.*—Copper ore is mined in the provinces of British Columbia, Ontario, and Quebec, the first-named being by far the most important. Its output has increased very largely during the past three years owing to the yield of the mines in the Kettle River, Grand Forks, and Osoyoos Mining Divisions, which lie upon the border of the United States. This "Boundary" district, as it is called, produced more than half the total output of the Province, which last year was reckoned to be 17,180 tons of fine copper.

In Ontario copper pyrites accompanies the nickeliferous pyrrhotite, which has made the Sudbury district so famous; during 1903 about 12,350 tons of high grade matte containing 3,193 tons of copper were shipped from that district. Large quantities of regulus containing copper and nickel are produced at the Sudbury smelting works and sent to the United States and Great Britain for the extraction of the two metals.

In the province of Quebec there are veins of cupreous iron pyrites containing a little silver, and they furnish an ore which is utilised in the manufacture of sulphuric acid before the valuable metals are extracted.

*Corundum.*—In the year 1897 large deposits of corundum were discovered near Raglan, in the counties of Peterborough, Hastings, and Renfrew, in Eastern Ontario; the mineral is now being worked on a large scale for the purpose of making corundum wheels, and Canada is becoming one of the greatest corundum-producing countries in the world. No returns of output in 1903 are given, but the shipments amounted to 703 tons of refined corundum and 267 tons of ore.

*Gold.*—At the present time the chief gold-producing provinces of the Dominion are the Yukon region of the North-West Territories, British Columbia, Nova Scotia, and Ontario.

The Yukon region, with the great Klondike goldfield, produced nearly two-thirds of Canada's output; but the yield of 592,555 ozs. shows a falling off of 15·5 per cent. compared with that of the previous year.

Next in importance is British Columbia, with a yield of 285,852 ozs. of gold in 1903, of which 53,021 ozs. were obtained from alluvial deposits and 232,831 ozs. from lodes. The most important alluvial or placer district is Cariboo, which was famous even so long ago as 1859. Most of the lode gold is extracted by smelting auriferous copper ores in the Rossland, Nelson, and "Boundary" districts, and some by amalgamation and concentration.

The gold of Nova Scotia is derived from free-milling quartz veins

Ontario is not yet producing a large quantity of gold, though the labours of prospectors have proved the existence of auriferous veins over a considerable extent of country from the extreme west of the province in the vicinity of the Lake of the Woods, through Rainy Lake, Seine River, Manitou Lake, Wahnapiatae Lake, to the Marmora district in the east.



## CANADA—continued.

*Granite and Miscellaneous Building Stones.*—Building stones, such as granite, limestones, marble, and sandstone abound in the Dominion, and it is only the lack of a sufficient market which prevents their being worked on a larger scale.

*Graphite.*—This mineral is obtained in the provinces of New Brunswick, Ontario, and Quebec from crystalline limestone in the Laurentian rocks. All the graphite raised in 1903 came from three mines in the province of Ontario.

*Gypsum.*—New Brunswick and Nova Scotia are remarkable for thick beds of gypsum, some of which occurs in the form of spotlessly white alabaster. A small amount of gypsum is being mined in Ontario.

*Iron Ore.*—Numerous iron ore deposits are known in Nova Scotia, but the output is at present small in comparison with the quantity which is imported from Newfoundland. In Quebec the furnaces use bog ore produced in the province in admixture with ores brought from outside. In Ontario iron ore is obtained on a large scale from Helen Mine at Michipicoten on Lake Superior, and prospecting work is being carried on actively in many iron ore districts discovered during the last few years throughout the northern part of the province, known as New Ontario.

*Lead Ore.*—The mineral resources of British Columbia are by no means confined to gold. This province is a large producer of argentiferous lead ore, which is obtained especially in the East and West Kootenay districts.

*Mercury.*—A little cinnabar was obtained a few years ago from mines near Kamloops Lake, in British Columbia, but none appears to have been raised since 1897.

*Mica.*—This mineral is mined quite extensively in various places. The phlogopite and biotite varieties are obtained in the provinces of Ontario and Quebec, in the district about Ottawa, whilst transparent muscovite of excellent quality comes from Tête Jaune Cache, in British Columbia.

*Natural Gas.*—In Essex and Welland counties in the peninsula of Ontario, natural gas has been obtained by boring down to the Lower Silurian rocks. A great many holes have been put down and most of the gas obtained was formerly piped to Buffalo and Detroit and adjacent points in the United States. The quantity, however, has greatly diminished during the past few years, and Detroit and vicinity is not now supplied from Canada.

*Nickel.*—Canada can boast that it possesses rich and important deposits of nickel in the Sudbury district, where the metal occurs in pyrrhotite, more or less mixed with copper pyrites. The output in 1903 shows an increase, although the value is lower than that of the previous year.

*Ochre.*—The most important ochre deposits are near Three Rivers, Champlain County, Quebec.

*Petroleum.*—Rock oil is produced only in the peninsula of Ontario, where one chief pool and several of less extent have been proved. The crude oil is piped to refineries at Sarnia and Petrolia, Ontario.

*Phosphate of Lime.*—This mineral has been extensively worked from deposits in the Laurentian rocks, especially in the province of Quebec, north of Buckingham, and also to a less extent in the province of Ontario, north of Kingston. Owing to the competition of phosphates from the United States, prices have dropped, and practically none of the Canadian apatite mines are being worked as such. The phosphate appearing in the statistics was obtained as a by-product in mining for mica, or from the old waste heaps of abandoned workings.

*Platinum.*—A small quantity of platinum was produced in the Similkameen district from placer workings. In the form of sperrylite it occurs also in association with the chalcopyrite of the Sudbury nickel deposits.

*Salt.*—Thick beds of salt occur in Southern Ontario, in the Onondaga division of the Silurian rocks. The brine is pumped up and evaporated.

*Silver.*—The lead ores of British Columbia are often highly argentiferous. In 1903 this province contributed 90 per cent. of the silver obtained in Canada.

The rich silver ores in the Thunder Bay district of the province of Ontario are not being largely worked at the present time.

*Slate.*—A small amount of slate is obtained from the Cambrian rocks, in the province of Quebec.

*Zinc.*—The zinc is obtained from the county of Frontenac in Ontario.



## CANADA—continued.

TABLE 317.

QUANTITY and VALUE of MINERALS produced in the DOMINION of CANADA during the Years 1902 and 1903.\*

Mineral or other product.	1902.†			1903.‡		
	Quantity.		Market Value, less Charges of Transport from Place of Production.	Quantity.		Market Value, less Charges of Transport from Place of Production.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Actinolite ...	491	499	904	491	499	639
Arsenic ...	714	725	9,863	229	233	3,168
Asbestos ...	36,086	36,665	235,956	37,793	38,399	185,929
Baryta ...	979	995	813	1,038	1,055	808
Coal ...	6,422,448	6,525,513	2,974,969	7,139,852	7,254,429	3,279,030
Coke ...	448,253	455,446	312,161	485,832	493,628	341,861
Copper (fine, contained in ore).	17,323	17,601	926,997	19,322	19,632	1,177,040
Corundum ...	686	697	17,355	No returns.	No returns.	No returns.
Felspar ...	6,764	6,873	3,113	11,811	12,001	3,712
Fireclay ...	2,447	2,480	880	2,069	2,102	515
Flagstones ...	sq. ft. 87,300	sq. met. 8,110	1,595	Not stated.	—	Not stated.
Gold (fine) ...	ozs. 1,032,253	kil. 32,107	4,384,217	ozs. 911,059§	kil. 28,337	3,870,101
Granite ...	—	—	43,151	—	—	30,822
Graphite ...	978	994	5,815	659	670	4,879
Gravel and Sand ...	142,672	144,962	24,477	317,671	322,769	25,481
Grindstones ...	5,744	5,836	10,093	4,945	5,024	9,925
Gypsum ...	296,468	301,267	73,824	274,544	278,950	78,957
Iron ore... ..	248,517	252,505	142,982	328,779	334,055	189,569
" chromic ...	804	817	2,671	3,021	3,069	6,951
Iron (pig) ...	63,986	65,013	214,316	37,546	38,149	145,446
Lead ...	10,248	10,412	191,937	8,036	8,165	156,711
Limestone for flux in smelting iron ore.	262,137	266,344	45,061	247,725	251,700	53,269
Manganese ore... ..	75	76	835	121	123	388
Mica ...	—	—	27,925	—	—	32,768
Mineral water ...	—	—	20,548	—	—	20,548
Natural gas ...	—	—	40,272	—	—	34,705
Nickel ...	4,774	4,851	1,032,720	5,583	5,673	1,027,850
Ochres ...	4,424	4,495	6,266	5,559	5,648	6,666
Peat ...	424	431	342	982	998	678
Petroleum ...	galls. 18,571,840	litres 84,380,375	195,450	galls. 16,146,760	litres 73,362,126	189,590
Phosphate of lime ...	764	776	1,018	1,187	1,206	1,688
Platinum ...	—	—	39	—	—	—
Pyrates (Copper and Iron).	31,800	32,310	28,549	29,937	30,417	25,918
Salt ...	57,550	58,474	60,119	47,801	48,568	68,648
Sand (moulding) ...	11,921	12,112	5,682	3,186	3,237	1,491
Silver (fine) ...	ozs. 4,291,317	kilos. 133,475	459,935	ozs. 3,182,000	kilos. 98,971	349,475
Slate ...	—	—	3,915	—	—	4,529
Talc ...	615	625	371	614	624	424
Tripolite ...	939	954	3,384	746	758	3,432
Zinc ...	63	64	1,414	402	408	9,986
Building materials :—						
Bricks ...	—	—	—	—	—	—
Building stone ...	—	—	—	—	—	—
Cement, natural ...	—	—	—	—	—	—
" Portland ...	—	—	—	—	—	—
Lime ...	—	—	1,549,471	—	—	1,586,507
Pottery ...	—	—	—	—	—	—
Sewer pipe ...	—	—	—	—	—	—
Terra cotta ...	—	—	—	—	—	—
Tiles ...	—	—	—	—	—	—
Estimated value of mineral products not returned.	—	—	61,644	—	—	61,644
Total value ...	—	—	13,123,109	—	—	12,991,748

The mineral production of Canada on the whole again shows a decrease ; the total value of its metallic and non-metallic products did not quite reach 13 millions sterling, which is a falling off of 1·0 per cent. compared with the previous year.

In 1903 gold contributed 29·79 per cent. of the total value ; coal and coke, 27·87 per cent. ; copper, 9·06 per cent. ; nickel, 7·91 per cent ; silver, 2·69 per cent.

The mining industries of some of the provinces of the Dominion are sufficiently important to deserve separate tables.

\* Reports of the Division of Mineral Statistics and Mines of Canada for the years 1902 and 1903. Ottawa

† Revised figures.

‡ Preliminary Return, subject to revision.

§ Estimated on the value of 1 oz. of gold being worth £4 4s. 11½d.

|| Quantity exported.

CANADA—continued.

BRITISH COLUMBIA.\*

TABLE 318.

PERSONS EMPLOYED at MINES during the Years 1902 and 1903.

KIND OF MINES.	1902.			1903.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	3,101	910	4,011	3,137	1,127	4,264
Metal- { Shipping ...	2,219	1,126	3,345	1,531	945	2,476
iferous { Non-shipping†	184	158	342	131	143	274
Total ... ..	5,504	2,194	7,698	4,799	2,215	7,014

TABLE 319.

QUANTITY and VALUE of MINERALS produced during the Years 1902 and 1903.

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal ... ..	1,397,394	1,419,819	861,407	1,168,194	1,180,941	720,120
Coke ... ..	128,015	130,069	131,522	165,543	168,200	170,078
Copper ... ..	13,230	13,442	708,221	15,339	15,585	934,425
Gold, Alluvial... ..	oss. 53,657	kilos. 1,669	220,508	oss. 53,021	kilos. 1,649	217,895
" from veins, &c. ...	oss. 236,491	kilos. 7,356	1,004,439	oss. 232,831	kilos. 7,242	988,894
Lead ... ..	10,061	10,222	169,486	8,076	8,206	141,728
Silver ... ..	oss. 3,917,917	kilos. 121,861	398,903	oss. 2,996,204	kilos. 93,193	312,631
Other minerals ... ..	—	—	98,641	—	—	109,288
Total value ... ..	—	—	3,593,127	—	—	3,595,059

TABLE 320.

DEATHS from ACCIDENTS at COAL MINES during the Years 1902 and 1903.

Cause of Accident.	No. of Persons Killed.	
	1902.	1903.
<i>Underground:</i>		
Falls of coal ... ..	1	4
" rock ... ..	7	8
Explosion of gas ... ..	126	21
Crushed by ca ... ..	3	5
Blasting ... ..	—	1
Hoisting, ropes, &c....	—	—
Fire ... ..	—	—
Struck by posts ... ..	2	1
<i>Surface:</i>		
Railways ... ..	—	2
Miscellaneous ... ..	—	—
Total ... ..	139	42

\* Annual Reports of the Minister of Mines for British Columbia for 1902 and 1903. Victoria.  
† The statistics of Mines not shipping ores are very incomplete.

CANADA.—BRITISH COLUMBIA—continued.

During the year 1903 there were 12 fatal accidents at metalliferous mines, causing 18 deaths.

TABLE 321.

DEATH-RATE from ACCIDENTS at MINES during the Years 1902 and 1903.

KIND OF MINES.	1902.			1903.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	44.82	—	34.65	12.75	1.77	9.85
Metalliferous ...	—	—	3.59*	—	—	7.27*

The death-rate from accidents among coal-miners, although much lower than in 1902, is still high. Sixteen men (Chinamen) were killed by an explosion of gas at Union Colliery on the 16th July, 1903, and it is reported that matches, tobacco and cigarettes were found in the working places and also on some of the deceased.

Representations having been made to the Canadian Government that, in consequence of the ore from most of the lead mines in British Columbia carrying low silver values, the owners were obliged to suspend operations, an Act was passed in 1903 allowing the Governor in Council power to authorise the payment of a bounty of 75 cents per 100 lbs. of lead contained in lead-bearing ores mined in Canada, the bounty to be paid to the producer or vendor of such ores. A proviso is inserted, however, that the sum to be paid as such bounty shall not exceed \$500,000 in any fiscal year, and further that when the standard price of pig lead in London, England, exceeds £12 10s. per ton the bounty shall be reduced by the amount of such excess.

NOVA SCOTIA.†

TABLE 322.

PERSONS EMPLOYED at COAL MINES during the Years ended 30th September 1902 and 1903.

Year.	Under-ground.			Above-ground.			Construction.			Total.
	Men.	Boys.	Total.	Men.	Boys.	Total.	Men.	Boys.	Total.	
1902 ... ..	5,226	619	5,845	1,784	201	1,985	231	1	232	8,062
1903 ... ..	7,200	669	7,869	2,547	208	2,755	466	2	468	11,092

The number of persons employed at gold mines during the year ending 30th September 1903 was 591 and at iron mines 196.

\* Calculated on the number of persons employed at mines shipping ore.  
† Reports of the Department of Mines for Nova Scotia for 1902 and 1903, Halifax.



CANADA.—ONTARIO—continued.

TABLE 326.

QUANTITY and VALUE of MINERALS produced during the Years 1902 and 1903.

Mineral or other Product.	1902.			1903.		
	Quantity.		Value.	Quantity.		V.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Actinolite ... ..	714	725	1,264	491	499	
Arsenic... ..	714	725	9,863	229	233	
Calcium carbide ... ..	1,252	1,272	18,374	2,238	2,274	2
Corundum ... ..	1,015	1,031	17,284	999	1,015	1
Copper ... ..	4,339	4,409	139,784	4,760	4,836	14
Felspar ... ..	7,836	7,962	2,646	13,657	13,876	
Gold ... ..	ozs. 13,625	kilos. 424	47,225	ozs. 10,383	kilos. 323	3
Graphite ... ..	1,717	1,745	3,672	3,929	3,992	
Gypsum ... ..	1,712	1,739	3,935	4,036	4,101	
Iron ore ... ..	320,793	325,941	106,530	185,852	188,835	9
Iron pyrites ... ..	3,903	3,966	3,081	6,669	6,776	
Lead ... ..	—	—	—	22	22	
Lime ... ..	bushels 4,300,000	decalitres 15,829,494	126,781	bushels 3,400,000	decalitres 12,358,204	10
Mica ... ..	892	906	21,062	846	860	2
Molybdenite ... ..	3	3	82	76	77	
Natural gas ... ..	—	—	40,939	—	—	4
Nickel ... ..	5,308	5,393	454,307	6,248	6,348	51
Peat ... ..	—	—	—	982	998	
Petroleum (crude) ... ..	galls. 18,185,592	litres 82,825,473	266,910	galls. 16,640,338	litres 75,604,877	32
Salt ... ..	55,367	56,258	70,812	52,030	52,865	7
Silver ... ..	ozs. 96,666	kilos. 3,006	11,918	ozs. 16,688	kilos. 519	
Talc ... ..	622	632	191	821	834	
Zinc ore ... ..	848	862	2,363	1,027	1,043	
Building materials :— Bricks, tiles, pipes, &c.	—	—	443,723	—	—	49
Building stone, &c.	—	—	209,589	—	—	17
Cement, Portland ... ..	barrels 522,899	—	188,265	barrels 695,260	—	24
„ rock ... ..	„ 77,300	—	10,437	„ 99,549	—	1
Total value ... ..	—	—	2,200,987	—	—	2,36

TABLE 327.

NUMBER of DEATHS from ACCIDENTS at MINES during the Years 1902 and 1903.

Kind of Mine.	Number of Persons Killed.		Death-rate per 1,000 Persons Employed.	
	1902.	1903.	1902.	1903.
Copper ... ..	7 — 3	2	4.04	1.39
Nickel ... ..		2	—	3.87
Gold ... ..		3	7.73	9.26
Iron ... ..		3		

## QUEBEC.\*

This Province employed 4,662 persons during the year 1903 in mining and quarrying, of whom 1,300 were engaged in getting asbestos, the most important mineral.

TABLE 328.  
OUTPUT and VALUE of MINERALS during the Years 1902 and 1903.

Mineral.	1902.			1903		
	Statute Tons.	Metric Tons.	Value.	Statute Tons.	Metric Tons.	Value.
Asbestos ... ..	36,070	36,840	£ 241,378	34,971	35,532	£ 191,150
Barytes ... ..	315	320	508	393	399	542
Cement ... ..	barrels 36,000	—	12,534	barrels 40,000	—	13,562
Chrome iron ... ..	804	817	2,774	2,696	2,730	9,308
Copper ore ... ..	23,516	23,974	24,898	23,644	24,023	22,577
Felspar ... ..	46	47	35	18	18	8
Flagstones ... ..	sq. yds. 3,000	sq. metres 2,508	524	sq. yds. 3,000	sq. metres 2,508	524
Gold ... ..	ozs. 300	kilos. 9	1,110	ozs. 55	kilos. 2	205
Granite ... ..	—	—	32,877	—	—	32,877
Graphite ... ..	21	21	444	—	—	—
Iron ores ... ..	16,691	16,959	11,353	10,846	11,020	7,250
Lead ore ... ..	268	272	3,032	—	—	—
Mica ... ..	59	60	7,049	129	131	15,230
Ochre ... ..	1,388	1,410	3,735	1,559	1,584	4,200
Phosphate ... ..	787	800	1,110	1,060	1,077	1,688
Slate ... ..	squares 4,800	—	3,945	squares 5,510	—	4,529
Building materials... ..	—	—	266,096	—	—	266,096
Total value ... ..	—	—	613,452	—	—	569,746

Only one death resulted from accidents at mines and quarries during the year 1903, which was at the rate of .21 per thousand persons employed.

## Cape Colony.†

Though the diamond industry overshadows all other kinds of mining in the Colony, copper ore has long been a notable article of export.

*Asbestos.*—This mineral occurs in the form of narrow veins, from one to five inches wide, in a dark shale at Westerberg, in the Prieska district, and Koegas, in the Hay district.

*Coal.*—Outcrops of coal have been discovered at various points along the plateau lying between the Drakensberg range and the Matiwane Mountains, and along the southern slopes of those mountains, between the Kei and Umzimkulu rivers; the seams are mostly thin. Some specimens of coal found in the Cala district are reported to be of good quality and suitable for steam purposes. As shown by Table 330, the total output of coal was 185,262 statute tons in 1903. Of this amount, Indwe produced 119,718 tons; the rest came from collieries at Cyphergat, Sterkstroom, Molteno, &c.

\* Obalski, *Mining Operations in the Province of Quebec for the years 1902 and 1903*, Department of Lands, Mines and Fisheries, Quebec, 1903 and 1904.

† *Statistical Registers for 1902 and 1903*, Cape Town, and *Reports of the Inspector of Mines for Kimberley, &c., for 1902 and 1903*, Cape Town.

CAPE COLONY—continued.

*Copper Ore.*—Namaqualand produces all the copper ore ; apparently the copper m are not under official inspection.

*Crocidolite.*—Small quantities of this mineral, which is used for ornaments and jewel, are obtained in the district of Hay and other places.

*Diamonds.*—The gems are obtained mainly from open and underground working the solid rock near Kimberley, and to a small extent from alluvial diggings. three principal mines worked at the present time are De Beers, Kimberley, and Pre (Wesselton), but much progress has been made in the development of Dutoitspan M and it is expected that the latter will shortly become an important producing factor.\*

In addition to the Kimberley mines, there are a few diamond mines in the Barkly \ division, besides alluvial diggings.

*Gold.*—A small quantity of gold is obtained from Millwood in the Knysna divisor

*Salt.*—Salt pans are found in 17 divisions of the Colony, the largest being Cradock (Maraisburg), Ceres, Hope Town, Port Elizabeth, Prieska, Uitenhage, Malmesbury.

TABLE 329.  
PERSONS EMPLOYED† during the Years 1902 and 1903.

Class of Mine.	Under-ground.			Above-ground.			Total for 1903.			Tot 1
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.	
Coal ...	80	1,596	1,676	51	573	624	131	2,169	2,300	2,
Copper Ore...	—	—	—	—	—	—	320	1,901	2,221	2,
Diamond (Kimberley)	367	2,851	3,218	1,914	7,511	9,425	2,281	10,362	12,643†	12,

TABLE 330.  
QUANTITY and VALUE of MINERALS produced during the Years 1902 and 190:

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Va.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asbestos ... .. (exported)	40	41	645	272	276	4
Coal ... ..	165,557	168,214	158,929	185,262	188,235	178
Copper ore ... ..	27,396	27,836	308,004§	64,555	65,591	308
Crocidolite ... .. (exported)	2	2	70	12	12	
Diamonds ... ..	carats 2,486,326	kilos. 511	4,949,807	carats 2,463,691	kilos. 506	4,831
Fireclay ... ..	670	681	Not stated.	600	610	Not s
Gold ... ..	Not stated.	—	Not stated.	Not stated.	—	Not s
Salt, white ... ..	Not stated.	—	Not stated.	14,874	15,113	41
Total value ... ..	—	—	5,417,455	—	—	5,375

\* De Beers Consolidated Mines, Ltd., "Sixteenth Annual Report for the year ending 30th June, 1904," Kimberley, 1904.  
† Exclusive of a few persons employed in getting asbestos and salt.  
‡ In addition to these figures 987 persons were employed in 1903 in the mines in the Barkly West division.  
§ Value estimated.



CAPE COLONY—continued.

TABLE 331.

DEATHS from ACCIDENTS at COAL and DIAMOND (KIMBERLEY) MINES during the Year 1903.

Class of Mine.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	3	—	3	1·79	—	1·30
Diamond (Kimberley) ...	19	7	26	5·90	·74	2·06
Total for Coal and Diamond Mines for 1903.	22	7	29	4·50	·70	1·94
Total for preceding year*	39	10	49	8·04	1·06	3·44

In addition to these fatalities six persons were killed in the mines of the Barkly West division during 1903, and the death-rate per 1,000 persons employed was 6·08.

Kimberley Diamond Mines.†

TABLE 332.

PERSONS EMPLOYED during the Years 1902 and 1903.

Year.	Under-ground.			Above-ground.			Total.		
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total
1902 ...	357	2,814	3,171	1,750	7,135	8,885	2,107	9,949	12,056
1903 ...	367	2,851	3,218	1,914	7,511	9,425	2,281	10,362	12,643

TABLE 333.

DEATHS from ACCIDENTS during the Years 1902 and 1903.

Year.	Place.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
1902 ...	Under-ground ...	3	32	35	8·40	11·37	11·04
	Above-ground ...	—	10	10	—	1·40	1·13
	Total... ..	3	42	45	1·42	4·22	3·73
1903 ...	Under-ground ...	2	17	19	5·45	5·96	5·90
	Above-ground ...	—	7	7	—	·93	·74
	Total... ..	2	24	26	·88	2·32	2·06

\* Excluding Barkly West mines.  
† Reports of the Inspector of Mines for Kimberley, &c., for 1902 and 1903, Cape Town, and Statistical Register for 1903, Cape Town.

## CAPE COLONY—continued.

## Kimberley Diamond Mines—continued.

TABLE 334.

## CAUSES of ACCIDENTS in 1902.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud-rushes... ..	2	—	3	3	—	1	1
Falls of ground ... ..	47	2	12	14	5	32	37
Falling down “ passes ” ... ..	3	—	3	3	—	—	—
Machinery ... ..	1	—	1	1	—	—	—
Whilst ascending or descending by machinery.	4	—	3	3	—	9	9
Falling down shaft ... ..	1	—	—	—	—	1	1
Falling off staging in shaft ... ..	1	—	1	1	—	—	—
Falls from ladders... ..	7	—	—	—	—	7	7
Ignition of gas ... ..	1	—	—	—	1	—	1
Ground falling from sides of shaft	1	—	1	1	—	3	3
Things falling down shafts ... ..	2	—	—	—	—	2	2
On tramways or by trucks ... ..	9	—	—	—	—	9	9
Explosives ... ..	11	1	8	9	4	16	20
Miscellaneous ... ..	1	—	—	—	—	1	1
Total under-ground ... ..	91	3	32	35	10	81	91
<i>Surface and Open Works.</i>							
Falls of ground and débris ... ..	32	—	4	4	3	28	31
On tramways or by trucks ... ..	60	—	4	4	5	55	60
Machinery ... ..	12	—	—	—	4	8	12
Explosives ... ..	1	—	—	—	—	1	1
Miscellaneous ... ..	8	—	2	2	2	4	6
Total ... ..	113	—	10	10	14	96	110
Totals (under and above ground)	204	3	42	45	24	177	201

## CAPE COLONY—continued.

## Kimberley Diamond Mines—continued.

TABLE 335.  
CAUSES of ACCIDENTS in 1903.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud-rushes... ..	3	—	4	4	—	—	—
Falls of ground ... ..	30	—	9	9	3	19	22
Falling down "passes" ... ..	1	—	1	1	—	—	—
Machinery ... ..	1	—	—	—	1	—	1
Whilst ascending or descending by machinery.	2	—	1	1	—	1	1
Falling down shaft ... ..	2	1	—	1	1	—	1
Falling off staging in shaft ...	1	—	1	1	—	—	—
Falls from ladders... ..	4	—	—	—	—	4	4
Ignition of gas ... ..	—	—	—	—	—	—	—
Ground falling from side of shaft	2	—	—	—	2	—	2
Timber falling down shaft ...	2	—	1	1	—	1	1
On tramways or by trucks ...	9	—	—	—	1	8	9
Explosives ... ..	3	1	—	1	—	2	2
Miscellaneous ... ..	6	—	—	—	—	6	6
Total under-ground ...	66	2	17	19	8	41	49
<i>Surface and Open Works.</i>							
Falls of ground and débris ...	44	—	1	1	—	47	47
On tramways or by trucks ...	82	—	1	1	8	73	81
Machinery ... ..	5	—	1	1	2	2	4
Falling from face of open mine ...	2	—	—	—	—	2	2
Timber thrown down open mine	2	—	1	1	—	1	1
Burns from paraffin lamp ...	1	—	1	1	—	—	—
Explosives ... ..	5	—	—	—	—	9	9
Miscellaneous ... ..	17	—	2	2	8	8	16
Total ... ..	158	—	7	7	18	142	160
Totals (under and above ground)	224	2	24	26	26	183	209



Ceylon.\*

*Gems.*—In Ratnapura District 365 gem pits were at work during the year 1903, as against 427 in 1902, the principal stones found being rubies and cats' eyes. In Kandy District moonstones are obtained from mines at Attaragalla and Yatawara.

*Gold.*—Indications of the precious metal have been found in several places, but they are not sufficient at present to justify mining operations.

*Graphite.*—Plumbago or graphite is the most important mineral produced in Ceylon ; it occurs in gneiss and mica schist, and the workings are sometimes carried on to a depth of from 150 to 200 yards. Particulars of the methods of dressing the ore at Colombo are described in a paper † by Mr. G. A. Stonier (late H.M. Inspector of Mines in India).

*Mica.*—A small quantity is exported annually.

*Salt.*—This is obtained from salt lagoons or “pans,” and the manufacture is a Government monopoly. The quantity produced in 1903 was very small.

*Stone.*—“Cabook” is a local name for laterite, the most useful building stone in the island.

TABLE 336.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1902 and 1903.

Kind of Workings.	Under-ground.			Above-ground.			Total Number of Persons Employed in Mines and Mineral Workings.
	Males.	Females.	Total.	Males.	Females.	Total.	
Mines ... ..	13,882	—	13,882	29,131	4,874	34,005	47,887
Mineral Workings other than Mines.	485	10	495	19,065	6,771	25,836	26,331
Total for 1903 ...	14,367	10	14,377	48,196	11,645	59,841	74,218
Total for preceding year.	13,439	42	13,481	38,144	7,644	45,788	59,269

TABLE 337.

QUANTITY and VALUE of the MINERALS produced during the Years 1902 and 1903.

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coral ... ..	605	615	79	455	462	85
Mica (exported) ... ..	cwt. 1	kilos. 51	25	cwt 7	kilos. 356	40
Plumbago (exported)... ..	25,189	25,503	701,091	24,105	24,402	401,755
Precious stones and pearls ... ..	—	—	207	—	—	1,879
Salt ... ..	2,750‡	2,794	Not stated.	2,696‡	2,730	5,390
Stone :—	blocks			blocks		
“Cabook” ... ..	3,626,550	—	7,546	3,238,650	—	5,561
Gneiss ... ..	30,924	31,420	1,312	20,103	20,426	3,139
Granite ... ..	cubes 57,799	—	14,724	cubes 56,536	—	28,203
Gravel ... ..	17,102	17,376	1,756	21,340	21,682	2,158
Rubble stone ... ..	10,144	10,307	1,628	1,109	1,127	70
Total value ... ..	—	—	728,368	—	—	448,280

\* Blake, “Ceylon Report for 1903.” *Colonial Report*, Annual, No. 425 [Cd. 2238-2], London, 1904, pp. 27 and 33. Official Return furnished by the Government of Ceylon, and *Blue Books for Ceylon for 1902 and 1903*.  
† “Graphite Mining in Ceylon and India.” *Transactions of the Inst. of Min. Eng.*, 1904.  
‡ Manufactured salt.

TABLE 338.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS during the Years  
1902 and 1903.

Kind of Workings.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.		
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Above-ground.	Under and Above Ground.
Mines ...	16	—	16	1	—	1	17	1·15	·03	·36
Openworks...	—	—	—	2	—	2	2	—	·08	·08
Total for 1903.	16	—	16	3	—	3	19	1·11	·05	·26
Total for pre- ceding year.	6	—	6	1	—	1	7	·45	·02	·12

## Channel Islands.

The average number of persons employed each year in the stone quarrying industry of the Channel Islands is about 1,200.

TABLE 339.

QUANTITY and VALUE of STONE exported during the Years 1902 and 1903.\*

Mineral and Islands where obtained.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
Guernsey and Jersey :	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Stone, dressed or rough (exported).	374,732	380,746	202,730	408,090	414,639	220,088

## Christmas Island.†

This island possesses deposits of phosphate of lime which are rich enough to be of economic value. The phosphatic rock now being worked on a large scale is, in part at all events, a limestone altered into phosphorite by the percolation from overlying guano. Between five and six hundred persons are employed, and the shipments for 1903 were 70,096 tons, against 61,178 tons in 1902.

\* *Annual Statement of Trade of the United Kingdom for 1903*, Vol. II. [Cd. 2081], p. 358.† Taylor, "Straits Settlements Report for 1902." *Colonial Report, Annual*, No. 406 [Cd. 1768-11], London, 1903, p. 18, and *Annual Report on the District Office, Christmas Island, for the year 1903*.

## Cyprus.\*

*Copper*.—This is obtained from the ancient copper mine at Lymni, in Papho ; small quantities only are at present exported for experiment.

*Gypsum*.—As shown by the table, gypsum is of some importance, and the output and value are increasing.

*Salt*.—The value of the salt obtained by allowing sea water to evaporate under the action of the sun's rays amounted to £8,130 during 1903.

*Umber*.—"Terra umbra" has long been known as a product of Cyprus, and is worked in the Lanarca and Limassol Districts.

In addition to these minerals, sandstone and limestone are quarried for building and other purposes ; but the quantities are unknown.

TABLE 340.

QUANTITY and VALUE of the MINERALS produced during the Years 1902 and 1903

Minerals.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gypsum (exported)	7,030	7,148	3,597	10,349	10,515	5,919
Salt (collected) ...	3,386†	3,440	4,663	2,439	2,478	8,130
Umber (exported)	1,869	1,899	968	3,130	3,180	1,543
Total value ...	—	—	9,228	—	—	15,592

## Federated Malay States.‡

*Gold*.—There is a decrease of 4,484 ozs. in the output of 1903 as compared with the year 1902. The Raub Australian Co. produced 7,078 ozs. and the Malaysians Co. 2,854 ozs. of the total quantity of 15,070 ozs. obtained.

*Tin*.—The Malay Peninsula is the great tin-producing region of the world at the present day, and the States with the largest output are under British protection. The tin is obtained almost exclusively from alluvial deposits, worked partly by the open quarry method and partly by true underground mining.

The output of Perak in 1903 was 25,911 tons, or more than 50 per cent. of the total quantity of metallic tin obtained in the four States.

Hydraulic mining has been largely introduced for the purpose of working tin deposits in the Kinta district of Perak, and near Seremban in Negri Sembilan. There were 24 monitors at work in Perak in 1902 and 9 at work in Negri Sembilan in 1903.

Of the total output of tin in 1903 only 700 tons were obtained by vein mining, and that practically from two mines, viz. :—the Pahang Company's concession at Kuantan and the French Mining Company's land at Lahat (Perak).

The total number of coolies employed at the mines of the four different States, Negri Sembilan, Pahang, Perak, and Selangor, during the year 1903 amounted to 186,337, an increase of 6,386 on the previous year's figures.

\* Blue Books for Cyprus for 1901-02 and 1902-03, and Official Return furnished by the Government of Cyprus.

† Figures relating to the year ending March 31st, 1903. Quantity estimated.

‡ Official Return furnished by the Mines Department, Kuala Lumpur, Selangor. Annual Report on the Federated Malay States for 1903. Kuala Lumpur, 1904.



FEDERATED MALAY STATES—*continued.*

TABLE 341.

PERSONS EMPLOYED at MINES during the Years 1902 and 1903.

	State.	1902.	1903.
	Negri Sembilan ... ..	24,000	21,318
	Pahang ... ..	6,500	7,435
	Perak ... ..	80,436	82,872
	Selangor ... ..	69,015	74,712
	Total ... ..	179,951	186,337*

TABLE 342.

SUMMARY of QUANTITY and VALUE of MINERALS produced in the four States during the Years 1902 and 1903.

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold ... ..	ozs. 19,554	kilos. 808	63,550	ozs. 15,070	kilos. 469	58 969†
Tin‡ ... ..	46,480	47,226	5,438,043	49,863	50,663	6,108,217
Total Value ..	—	—	5,501,593	—	—	6,167,186

TABLE 343.

NEGRI SEMBILAN.

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold ... ..	ozs. 198	kilos. 8	620†	ozs. 2,664	kilos. 83	9,639
Tin‡ ... ..	4,376	4,446	511,992	5,078	5,159	622,055

TABLE 344.

PAHANG.

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold ... ..	ozs. 19,554	kilos. 608	63,550	ozs. 12,406	kilos. 386	49,330†
Tin‡ ... ..	1,376	1,398	160,875	1,500	1,524	183,750

\* 143,028 of these persons were employed in opencast workings, 20,918 underground in mines, and 22,391 in hydraulic mining.

† Calculated on export value.

‡ Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported or smelted at Singapore and elsewhere.

FEDERATED MALAY STATES—continued.

TABLE 345.

PERAK.

Mineral	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin* ... ..	24,159	24,547	2,826,608	25,911	26,327	3,174,097

TABLE 346.

SELANGOR.

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin* ... ..	16,569	16,835	1,988,578	17,374	17,653	2,128,315

TABLE 347.

DEATHS from ACCIDENTS at MINES during the Years 1902 and 1903.

State.	Number of persons killed.		Death-rate per 1,000 persons employe	
	1902.	1903.	1902.	1903.
Negri Sembilan ... ..	20	13	·83	·61
Pahang ... ..	5	6	·77	·81
Perak ... ..	21	20	·26	·24
Selangor... ..	11	24	·16	·32
Total ... ..	57	63	·32	·34

Gold Coast.†

The name of the Colony points to its mineral resources. The principal gold min are situated in Wassaw, Sefwhi, and Southern Ashanti Districts. The gold exported : 1903, which greatly exceeded the quantity for 1902, was obtained chiefly from the min of the Ashanti Goldfields Corporation and the Ashanti Sansu Mine. The form Company produced 47,438 ozs. and the latter 16,329 ozs. of gold. Considerab attention is being paid to dredging, two dredges are at work, one on the Offin River an the other on the River Ankobra.

Boring operations for oil are in progress in the Appolonian District.

\* Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported c smelted at Singapore and elsewhere.

† Official Return furnished by the Colonial Secretary of Gold Coast Colony, and *Colonial Reports, Annual, No. 4* [Cd. 2238-3], London, 1904, pp. 19 and 20.

GOLD COAST—continued.

Salt is made in the marshes near Adda and Kwitta, but the quantity is not given.

The ores of silver, mercury, lead, tin, copper, and iron have been found, and sandstone abundant, but these minerals are not at present worked.

TABLE 348.

PERSONS EMPLOYED at GOLD MINES during the Years 1901, 1902, and 1903.

Year.	Under-ground.	Above-ground.			Total.
	Males.	Males.	Females.	Total.	
1901 ... ..	910	2,666	83	2,749	3,659
1902 ... ..	2,084	3,965	81	4,046	6,130
1903 ... ..	2,726	4,046	7	4,053	6,779

TABLE 349.

QUANTITY and VALUE of GOLD EXPORTED during the Years 1902 and 1903.

Metal.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
Gold ... ..	Ozs. 26,891	Kilos. 886	£ 96,810	Ozs. 70,763	Kilos. 2,201	£ 254,747

TABLE 350.

DEATHS from ACCIDENTS at GOLD MINES during the Year 1903.

Under-ground.	Above-ground.	Total.	Death-rate per 1,000 persons employed.		
			Under-ground.	Above-ground.	Total.
13	2	15	4.77	.49	2.21

India.\*

The most important minerals worked are :—coal, gold ore, petroleum, and salt.

*Asbestos*.—Prospecting operations for this mineral are being carried on in Ajmer-Merwara.

*Coal*.—With a total output of 7,438,386 tons of coal in 1903, India now takes the lead as a coal producer amongst the Colonies of the British Empire. More than five-sixths of the coal produced in India comes from Bengal ; the remainder is obtained from the Punjab, Central Provinces, Assam, Burma, Central India, Rajputana, the Nizam's Dominions, Kashmir, and Baluchistan.

\* Government of India, Department of Revenue and Agriculture, *Statistics of Mineral Production in India in the ten years 1894 to 1903*, Calcutta, 1904 ; Holland, *Records of the Geological Survey of India*, Vol. xxxii., Part I., Calcutta, 1905 and information furnished by the Chief Inspector of Mines in India.



## INDIA—continued.

The resources of India as a coal-producing country are immense, and very large areas rich in mineral fuel, have not yet been touched. The principal coal mines are in the following coalfields and districts:—Raniganj, Giridih, and Jherria in Bengal, Singareni in the Nizám's Territory, Lakhimpur in Upper Assam, Mohpani and Warora in the Central Provinces, and at Umaria in the Central Indian Agency.

*Gems and Precious Stones.*—Upper Burma has long been famous for its rubies, and the mining industry has entered the profitable stage. In addition, Upper Burma yields jade and a small amount of inferior amber, and some tourmaline.

*Gold.*—The most important mineral industry in India is gold mining; small quantities of the precious metal are washed from river sands in very many parts of the country, and dredging operations have commenced in the upper reaches of the Irawadi River, but the total amount so obtained is insignificant compared with the output of the quartz veins of Kolar, Mysore. The total production of gold in 1903 was 603,218 ozs., and the value of this quantity, £2,302,493, is equal to nearly twice the total value of the coal obtained in the same period.

In Mysore the output in 1903 was 538,433 ozs. (16,747 kilos.) of fine gold, and the number of persons employed in the gold mines was 27,355.

*Iron.*—The various ores of iron, viz., magnetite, hematite, limonite, and clay ironstone occur abundantly, and are smelted on a small scale by the aid of charcoal all over India. With the exception of Barakar, in Bengal, where the conditions for the manufacture of pig iron are favourable on account of the proximity of iron ore and good coking coal, and the smelting is carried on by modern methods, no successful attempt has been made to manufacture iron on a large scale.

*Manganese Ore.*—The industry of quarrying manganese ore was commenced a little more than 10 years ago, and has since developed considerably. The output, which in 1897 was only 3,130 tons, now reaches 171,806 tons. The chief deposits are near Kamptee in the Central Provinces, and in the Vizagapatam district, Madras. The ore in the former district yields from 51 to 54 per cent. of metal.

*Mica.*—Quarrying and mining for mica are principally confined to the provinces of Bengal and Madras, but a small quantity is obtained in Ajmer-Merwara.

*Petroleum.*—The oil wells in Upper Burma, where petroleum has been obtained for more than 2,000 years, furnished in 1903 over 85 million gallons, and Assam 2½ million gallons. The total exports from Burma of the products of petroleum in 1903–4 were 35,586,378 gallons of kerosene, 3,235,803 gallons of other kinds of mineral oil, and 35,969 cwt. of paraffin wax.

*Salt.*—The sources of the salt supply are: (a) rock-salt mines and quarries of the Punjab, Kohat, and Mandi State; (b) lakes and wells of Rajputana, wells and springs of the Punjab, and Upper Burma; (c) evaporation of sea water in Bombay, Sind, Madras, and Lower Burma. The production fluctuates with the seasons. The output for 1903 only amounted to 823,184 tons. More than two-thirds of this quantity was made from sea water.

*Saltpetre.\**—The nitre of India is obtained from a natural efflorescence from the soil, especially in the province of Bihar. The crude earth is purified by solution, filtration, evaporation, and crystallization.

The area over which saltpetre is manufactured is estimated at 232,314 square miles, and according to the census of 1891 there were 119,558 saltpetre workers and sellers in India.

According to the Official Statistical Department† the average production in Bengal is stated to amount to only about 13,100 tons, but this quantity is evidently too low for the average annual exports of refined saltpetre from Calcutta in the last five years have amounted to 18,731 tons, and this represents a much larger quantity of crude saltpetre.

*Slate.*—This mineral is quarried at Monghyr, Bengal, and in the Kangra Valley, and Rewari, Punjab. It is used for roofing, paving, &c.

\* Hooper, *Review of the Mineral Production in India for 1897*, Calcutta, 1898, p. 54.

† *Statistics of Mineral Production in India in the Ten Years 1894 to 1903*, Calcutta, p. 1.

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\* Hooper, *Review of the Mineral Production in India for 1897*, Calcutta, 1898, p. 54.

† *Statistics of Mineral Production in India in the Ten Years 1894 to 1903*, Calcutta, p. 1.

## INDIA—continued.

*Soda Salts.*—The carbonate and the sulphate of soda are manufactured in very many districts of India from the surface soil or from saline efflorescences, in like manner to saltpetre.

*Tin Ore.*—Tin mining is conducted on a small scale in Burma ; 110 tons of ore were raised in the Tenasserim division in 1903.

TABLE 351.

PERSONS EMPLOYED in and about MINES and QUARRIES in INDIA for the  
Years ending 31st December 1902 and 1903.\*

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
1902.							
Coal ... ..	48,835	19,397	68,232	20,293	10,377	30,670	98,902
Corundum ... ..	10	16	26	7	17	24	50
Gems ... ..	2,207	74	2,281	1,086	75	1,161	3,442
Gold ... ..	16,323	40	16,363	9,595	1,852	11,447	27,810
Iron ore ... ..	1,204	506	1,710	496	346	842	2,552
Magnesite ... ..	85	85	170	25	65	90	260
Manganese ore ... ..	3,243	1,955	5,198	482	367	849	6,047
Mica ... ..	4,780	1,250	6,030	1,669	1,801	3,470	9,500
Plumbago ... ..	244	—	244	343	113	456	700
Salt ... ..	1,358	680	2,038	188	22	210	2,248
Slate, &c. ... ..	1,692	425	2,117	1,964	1,163	3,127	5,244
Total ... ..	79,981	24,428	104,409	36,148	16,198	52,346	156,755†
1903.							
Coal ... ..	40,899	16,389	57,788	18,898	9,452	28,350	86,138
Corundum ... ..	14	—	14	3	10	13	27
Gems ... ..	1,502	179	1,681	4,611	3,005	7,616	9,297
Gold ... ..	18,139	—	18,139	9,126	1,355	10,481	28,620
Iron Ore ... ..	230	340	570	150	20	170	740
Manganese ore ... ..	3,464	2,271	5,735	686	521	1,207	6,942
Magnesite ... ..	—	—	—	30	35	65	65
Mica ... ..	3,766	1,422	5,188	2,153	1,758	3,911	9,099
Plumbago ... ..	14	—	14	27	—	27	41
Salt ... ..	703	486	1,189	116	6	122	1,311
Slate, &c. ... ..	891	596	1,487	575	446	1,021	2,508
Total ... ..	69,622	22,183	91,805	36,375	16,608	52,983	144,783

\* Official Return furnished by the Chief Inspector of Mines in India.

† Exclusive of 4,100 persons employed at the petroleum refineries.



INDIA—continued.

TABLE 352.

SUMMARY of OUTPUT and VALUE of MINERALS during the Years 1902 and 1903.

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Coal ... ..	7,424,480	7,543,625	1,366,909	7,438,386	7,557,754	1,366,909
Copper ore ... ..	4	4	(Not stated)	(Not stated)	—	(Not stated)
Gold ... ..	oss. 517,639	kilos. 16,100	1,970,230	oss. 603,218	kilos. 18,762	2,000,000
Iron ore ... ..	85,235	86,803	(Not stated)	(Not stated)	—	(Not stated)
Jadestone... ..	188†	191	43,807	120†	122	43,807
Magnesite ... ..	8,540	3,597	(Not stated)	826	839	(Not stated)
Manganese ore ... ..	157,780	160,312	120,538	171,806‡	174,563	120,538
Mica ... ..	1,021†	1,037	87,523	1,077†	1,094	87,523
Do. ... ..	(Not stated)	—	71	—	—	71
Petroleum ... ..	gals. 56,607,688	litres 257,194,653	217,816	gals. 87,859,069	litres 399,183,990	217,816
Plumbago ... ..	4,575	4,648	(Not stated)	3,394	3,448	(Not stated)
Salt ... ..	1,040,206	1,056,899	321,272	823,184	836,394	321,272
Saltpetre (refined) ... ..	18,731†	19,032	(Not stated)	18,731†	19,032	(Not stated)
Tin ore ... ..	100	102	5,340	110	112	5,340

TABLE 353.

OUTPUT and VALUE of MINERALS, classified according to the PROVINCES or STATES, for the Years 1902 and 1903.\*

Mineral and Province or State where wrought.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
INDIA.						
Assam.	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	
Coal ... ..	221,096	224,644	69,869	239,328	243,169	
Petroleum ... ..	gals. 1,756,759	litres 7,981,761	5,856	gals. 2,528,785	litres 11,489,428	
Bengal.						
Copper ... ..	4	4	(Not stated)	—	—	
Coal ... ..	6,259,236	6,359,682	967,960	6,361,212	6,463,294	
Iron ore ... ..	182,482	183,806	(Not stated)	(Not stated)	—	
Mica ... ..	833†	846	68,202	900†	914	
Salt ... ..	44	45	20	94	96	

\* Government of India, Department of Revenue and Agriculture, *Statistics of Mineral Production in India in years 1894 to 1903*, Calcutta, 1904.  
† Exported.  
‡ Including 6,800 tons for which the value is not stated.

## INDIA—continued.

OUTPUT and VALUE of MINERALS, classified according to PROVINCES or STATES, for the Years 1902 and 1903—continued.

Mineral and Province or State where wrought.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
INDIA—cont.						
Madras.	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Magnetite ... ..	3,540	3,597	(Not stated)	826	839	(Not stated)
Manganese ore ... ..	68,171	69,265	30,929	63,452	64,470	31,187
Mica ... ..	188*	191	19,320	166*	169	18,121
Salt ... ..	358,450	364,202	119,894	244,923	248,853	85,941
Bombay, including Sindh.						
Mica ... ..	(Not stated)	—	71*	11*	11	374
Salt ... ..	392,037	398,328	78,059	281,436	285,952	82,068
Burma.						
Coal ... ..	13,302	13,515	6,208	9,306	9,455	2,482
Gold ... ..	oss. 2,179	kilos. 68	5,895	oss. 1,095	34	3,989
Jadestone ... ..	188*	191	43,807	120*	122	54,839
Petroleum ... ..	gals. 54,848,980	litres 249,204,037	211,933	gals. 85,328,491	litres 387,686,415	345,909
Salt ... ..	20,013	20,334	50,405	26,174	26,594	59,706
Tin ore ... ..	100	102	5,340	110	112	9,153
Central Provinces.						
Coal ... ..	196,981	200,142	58,590	159,154	161,708	48,020
Manganese ore ... ..	89,609	91,047	89,609	101,554	103,184	101,554
Punjab.						
Coal ... ..	55,373	56,262	24,039	43,704	44,405	18,838
Petroleum ... ..	gals. 1,949	litres 8,855	27	gals. 1,793	litres 8,146	26
Salt ... ..	269,177†	273,497	71,133‡	270,068†	274,402	77,169‡
Native States.						
Coal ... ..	678,492	689,380	240,243	625,682	635,723	202,784
Gold ... ..	oss. 515,460	kilos. 16,033	1,964,336	oss. 602,123	kilos. 18,728	2,298,505
Iron ore ... ..	2,753	2,797	(Not stated)	(Not stated)	—	—
Manganese ore ... ..	—	—	—	6,800	6,909	(Not stated)
Plumbago ... ..	4,575	4,648	(Not stated)	3,394	3,448	(Not stated)
Salt ... ..	485	493	1,761	489	497	2,787

\* Exported.

† Including output of Rajputana.

‡ value

§ Including 1,138 tons of coal in 1902 and 999 tons in 1903 which were extracted during prospecting operations, and for which no value has been given.

|| Exclusive of a large quantity included under Punjab.

## INDIA—continued.

TABLE 354.

NUMBER of DEATHS from ACCIDENTS at MINES and QUARRIES during the Years  
1902 and 1903.\*

Class of Mines or Workings.	1902.			1903.		
	Number of Deaths.			Number of Deaths.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	68	9	77	88	9	97
Gems ... ..	6	3	9	4	1	5
Gold† ... ..	‡	‡	59	60	11	71
Manganese ... ..	1	—	1	—	1	1
Mica ... ..	2	—	2	7	2	9
Salt ... ..	—	—	—	—	—	—
Slate, &c. ... ..	—	—	—	2	—	2
Total ... ..	‡	‡	148	161	24	185

TABLE 355.

DEATH-RATE from ACCIDENTS at MINES and QUARRIES during the Years  
1902 and 1903.\*

Class of Mines or Workings.	1902.			1903.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	1·00	·29	·78	1·52	·32	1·13
Gems ... ..	2·63	2·58	2·61	2·38	·13	·54
Gold ... ..	‡	‡	2·12	3·31	1·05	2·48
Manganese ... ..	·19	—	·17	—	·83	·14
Mica ... ..	·33	—	·21	1·35	·51	·99
Salt ... ..	—	—	—	—	—	—
Slate, &c. ... ..	—	—	—	1·34	—	·80
Total ... ..	‡	‡	·94	1·75	·45	1·28

\* Report of the Chief Inspector of Mines in India for the year ending 31st December, 1903, Calcutta, 1904.

† Including Mysore Gold Mines.

‡ Not stated.



INDIA—continued.

TABLE 356.

DEATHS FROM ACCIDENTS at the MYSORE GOLD MINES.\*

Year.	Persons Employed.	Deaths.			Death-rate per 1,000 Persons Employed.		
		Under- ground.	Above- ground.	Total.	Under- ground.	Above- ground.	Total.
1899 ... ..	21,093	32	6	38	2·66	·66	1·80
1900 ... ..	24,587	55	8	63	4·17	·70	2·56
1901 ... ..	25,060	61	14	75	4·29	1·29	2·99
1902 ... ..	26,268	—	—	58	—	—	2·20
1903 ... ..	27,355	58	11	69	3·29	1·13	2·52
Average death-rate	—	—	—	—	—	—	2·44

Mining in India is governed by Act No. VIII. of 1901 : “ An Act to provide for the Regulation and Inspection of Mines.”

Labuan. (See BRITISH BORNEO.)

Leeward Islands. (See REDONDA.)

Malta.

A soft oolitic limestone is quarried for building purposes ; 61,751 slabs, 2,525 blocks, 450 tons in blocks of stone, and 101 packages of stone-work were exported in 1902-3.†

Natal (including ZULULAND).‡

The output of coal continues to increase. In 1903 there were 13 electrical coal-cutters in operation as against 11 in 1902 ; 24 per cent. of the total output of coal was cut by these machines.

In addition to coal, the Colony is stated to possess deposits of asbestos, copper ore, gold ore, graphite, gypsum, lead ore, limestone, marble, mica, molybdenum, nickel ore, and slate. During the year 1903 the development of the workings of several of these minerals was continued.

TABLE 357.

PERSONS EMPLOYED at PRODUCING COLLIERIES during the Years 1902 and 1903.

Year.	Below-ground.	Above-ground.	Total.
1902	2,623	1,227	3,850
1903	2,913	1,492	4,405

\* Official Returns furnished by the Chief Inspector of Mines in India, and the Report of the Chief Inspector of Mines for Mysore for the year 1903-1904. Madras, 1904.

† Gov. Sir C. M. Clarke, “ Malta. Report for 1902-3.” Colonial Reports—Annual, No. 410 [Cd. 1768-15].

‡ Reports on the Mining Industry of Natal for 1902 and 1903. Pietermaritzburg.

NATAL—continued.

TABLE 358.

QUANTITY and VALUE of COAL and GOLD produced during the Years 1902 and 1903.

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
Coal ... ..	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	
Gold (fine) ... ..	592,821	602,334	512,574	713,548	724,999	418
Mica ... ..	ozs. 78	kilos. 2	331	ozs. 1	—	
	51	52	Not stated.	27	27	Not stated.

TABLE 359.

DEATHS from ACCIDENTS at PRODUCING COLLIERIES during the Years 1902 and 1903.

Year.	Under-ground.			Above-ground.			Total Under-ground and Above-ground.	Deaths per 1000 Emp.
	Males.	Females.	Total.	Males.	Females.	Total.		
1902*	12	—	12	3	—	3	15	
1903	13	—	13	—	—	—	13	

In addition to the 13 deaths recorded in the table, there were 7 persons killed in collieries which had not reached the production stage.

Newfoundland.†

At the present time the important mineral exports from Newfoundland are copper, copper regulus, and iron ore.

*Copper Ore.*—The mines at Tilt Cove produced more than 86 per cent. of the output for 1903.

*Gold.*—The discovery of gold-bearing quartz veins in the Island has led to the commencement of operations for obtaining the precious metal, but the Sop Arm in White Bay is the only one at present that has shown an output worth recording.

*Iron Ore.*—The whole of the ore comes from Bell Island, Conception Bay, where valuable deposits of red hæmatite are being mined on a large scale; the ore is shipped to Nova Scotia and to the United States.

*Slate.*—The manufacture of roofing slate in this colony is growing in importance, and a considerable quantity of the output is exported to England.

TABLE 360.

PERSONS EMPLOYED at MINES and QUARRIES during the Years 1902 and 1903.

Kind of Workings.						1902.	1903.
Copper mines ... ..						448	624
Iron ore workings ... ..						791	844
Pyrites " ... ..						225	250
Gold mines ... ..						30	54
Barytes ... ..						—	30
Stone quarries ... ..						262†	265
Total ... ..						1,756	2,067

\* Revised figures.  
† Report on the Mineral Resources for 1903, by J. P. Howley, Director of Geological Survey of Newfoundland, 1903.  
‡ Incomplete.

New Zealand.\*

The three principal minerals worked in New Zealand are coal, gold, and kauri gum.

*Coal.*—178 collieries were at work in 1903. The most important both as regards quantity and quality of coal produced are situated near Westport, on the west coast of the Middle Island. More than one-third of the total output of New Zealand is brown coal or lignite, most of which is obtained in the Southern district of Middle Island ; many of the workings are open-cast.

The coal mines which are being worked by the State under “ The State Coal Mines Act, 1901,” at Point Elizabeth and Seddonville have now commenced shipping coal.†

*Gold.*—The value of the output of gold in 1903 exceeded two millions sterling ; this figure has not been reached since the year 1871. The precious metal occurs in various parts of the Islands ; it is extracted by ordinary alluvial diggings, by hydraulic mining, by dredging river beds and river flats, and by quartz mining. Probably there is more gold dredging in New Zealand than in any other part of the world, and this branch of mining finds employment for more than 2,000 persons in the Colony. During the year 201 dredges were at work.

*Kauri Gum.*—Digging kauri gum upon the sites of old pine forests affords employment to a large number of Europeans and natives.

*Phosphate of Lime.*—Deposits of phosphate of lime were discovered in the spring of 1902, and during the past year 4,000 tons were quarried.

TABLE 363.

PERSONS EMPLOYED at COAL MINES during the years 1902 and 1903.‡

	Year.	Under-ground.	Above-ground.	Total.
	1902	2,082	803	2,885
	1903	2,135	717	2,852

TABLE 364.

PERSONS EMPLOYED at GOLD MINES during the Years 1902 and 1903.§

Mining District.	Alluvial Miners.		Quartz Miners.		Total.		Grand Total.	
	European.	Chinese.	European.	Chinese.	European.	Chinese.	1903.	1902.
Auckland .. ...	—	—	2,538	—	2,538	—	3,538	2,752
Marlborough ... ..	84	—	26	—	110	—	110	135
Nelson ... ..	1,200	266	857	—	2,057	266	2,323	2,245
Westland ... ..	1,453	278	—	—	1,453	278	1,731	2,145
Otago ... ..	2,855	477	176	—	3,031	477	3,508	4,121
Total ... ..	5,592	1,021	3,597	—	9,189	1,021	10,210	11,398

\* Hon. James McGowan, *New Zealand, Mines Statement.* Wellington, 1903.  
† *New Zealand. Report on the working of State Coal Mines for the year ending 31st March, 1904.* Wellington, 1904.  
‡ *New Zealand, Inspection of Coal Mines Reports.* C.—3a, Wellington, 1903 and 1904.  
§ Hon. James McGowan, *New Zealand, Mines Statement.* Wellington, 1904. C.—2, p. 15.



NEW ZEALAND—continued.

TABLE 365.

QUANTITY and VALUE of MINERALS produced during the Years 1902 and 1903.\*

Mineral.	1902.			1903.		
	Quantity		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Chrome ore ... ..	175	178	525	—	—	—
Coal (including Brown Coal and Lignite).	1,362,702	1,384,570	741,759	1,420,193	1,442,984	762,858
Copper ore ... ..	—	—	—	6	6	123
Gold ... ..	oss. 508,045	kilos. 15,802	1,951,433	oss. 533,314†	kilos. 16,588	2,037,831
Iron ore (Haematite)‡	17	17	116	—	—	1
Kauri gum ... ..	7,430	7,549	450,223	9,357	9,507	631,102
Manganese ore ... ..	—	—	—	70	71	210
Oil Shale ... ..	2,338	2,376	1,169	36	37	18
Silver ... ..	oss. 674,196	kilos. 20,970	71,975	oss. 911,914	kilos. 28,364	91,497
Sundry mixed minerals ... ..	415	422	4,422	625	635	7,014
Total value ... ..	—	—	3,221,622	—	—	3,530,654

TABLE 366.

DEATHS from ACCIDENTS at MINES and DREDGING WORKS during the Years 1902 and 1903.\*

Kind of Workings.	1902.		1903.	
	Number of Deaths.	Death-rate per 1,000 Persons Employed.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
Coal mines ... ..	2	·69	4	1·40
Gold mines ... ..	2	·53	9	2·50
„ alluvial, hydraulic, sluicing and dredging.	12	1·58	10	1·51
Total ... ..	16	1·12	23	1·76

\* Hon. James McGowan, *New Zealand, Mines Statement*. Wellington, 1904. C.—2, pp. 1 and 2.  
† Containing 479,746 oss. of fine gold.  
‡ Used for paint.

Nigeria.\*

The Niger Company exported 21½ cwt. of tin, valued at £79, during the year 1902. The tin found by that Company, in the course of prospecting, is alluvial and consists of coarse and fine grains ; it is at present worked by the natives over an area of 11 mile of river and tributaries. The fine tin has been traced for a further distance of 14 miles making altogether a length of 25 miles of river commercially workable for this metal. In addition to tin, Nigeria is known to contain deposits of several other minerals, and in 1903 Professor Dunstan, F.R.S., Director of the Imperial Institute, made a report † on a series of specimens which were received from the Protectorate.

North Borneo. (See BRITISH BORNEO.)

Nova Scotia. (See CANADA.)

Ontario. (See CANADA.)

Orange River Colony.‡

*Coal.*—The Colony possesses excellent coalfields, but during 1903, owing to a lack of railway facilities, only one colliery (Cornelia Mine) produced coal in any quantity. One or two companies are putting down extensive plant, and as soon as the producing stage is reached a considerable increase in the returns of output is anticipated.

*Diamonds.*—The principal mines are the Jagersfontein, Koffyfontein, Lace, and the Orange Free State and Transvaal. During the six months from July to December, 1903 the total output of diamonds was 127,771 carats, valued at £370,350, and of this quantity the Jagersfontein Mine produced 93,247 carats.‖ The production of this important mine for the year ended 31st March, 1904, was 167,598 carats, of £555,696 value, which is equivalent to an average value of 66s. 3d. 75 per carat.

With regard to other minerals, prospecting for gold is being carried on, tin has been found in the Caledon River, and copper, lead, silver, sulphur, saltpetre, &c., are known to exist in the Colony.

TABLE 367.  
AVERAGE NUMBER of PERSONS EMPLOYED§ at COAL and DIAMOND MINES during the SIX MONTHS July—December, 1903.

Kind of Mines.	Number of Persons.		
	White.	Coloured.	Total.
Coal ... ..	78	804	882
Diamond ... ..	533	4,016	4,549
Total ... ..	611	4,820	5,431

\* Sir F. Lugard. "Northern Nigeria Report for 1902." *Colonial Reports*—Annual No. 409. [Cd. 1768-14], London, 1903, pp. 69 and 70.  
† "Northern Nigeria" *Colonial Reports*—Miscellaneous, No. 26 [Cd. 1939], London, 1904.  
‡ Correspondence relating to Affairs in the Transvaal and Orange River Colony [Cd. 2104], London, 1904, pp. 129, 130 and 140.  
§ Excluding persons employed in "prospecting."  
‖ *The New Jagersfontein Mining and Exploration Company, Ltd. Sixteenth Annual Report and Accounts for the year ended 31st March, 1904.* Kimberley, 1904. Page 14.

TABLE 368.

QUANTITY and VALUE of MINERAL produced during the Six Months  
July—December, 1903.

Mineral.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£
Coal ... ..	43,114	43,806	19,823
Diamonds .. ..	Carats 127,771	Kilos. 26	370,350
Total Value ... ..	—	—	390,173

Quebec. (See CANADA.)

Redonda† (Leeward Islands).

On an average 66 persons were employed in getting phosphate during the year 1903.

TABLE 369.

QUANTITY and VALUE of MINERAL produced during the Years 1902 and 1903.

Mineral.	1902.			1903.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Phosphate of alumina ...	130	132	162	1,085	1,102	1,483

Rhodesia.†

Rhodesia is rich in minerals, and—in addition to gold—coal, silver and lead are now recorded in the table of production.

*Coal.*—The 46,870 tons of coal were obtained from the Wankie coalfield, which is situated 140 miles north-west of Bulawayo. The completion of the railway to this field has been the means of obviating the difficulty previously experienced at many mines of obtaining fuel. The coal is reported as being of excellent quality.

*Copper.*—Ores of this metal are reported to exist in the Lo Mogundi, Umtali and Victoria districts of Southern Rhodesia, and a fair amount of work has been done to develop the deposits, but it is in Northern Rhodesia that the most valuable deposits have been discovered, where the Northern Copper Co. and the Rhodesia Copper Co. have been actively engaged in mining.

† Information furnished by the London Phosphate Syndicate, Ltd.  
‡ Report of the British South Africa Company for the year ending 31st March, 1903; Report of the Secretary for Mines for the year ended 31st March, 1904, Salisbury, 1904; the Ninth Annual Report of the Rhodesia Chamber of Mines for the year ended 31st March, 1904, Bulawayo, 1904; and information furnished by the British South Africa Company.



RHODESIA—*continued.*

*Gold.*—The auriferous deposits are very extensive, and the output of gold in 1903 reached nearly a quarter of a million ounces. The number of stamps at work was over 500, and the quantity of quartz crushed exceeded 500,000 tons.

*Lead and Zinc.*—Important deposits of these minerals are stated to have been proved at the Broken Hill Mine, and, as soon as the railway is made, a continuous output is assured.

The average number of persons employed at the mines in Matabeleland during the year ended 31st March, 1904, was 7,533, of whom 2,805 were underground workers.

TABLE 370.

QUANTITY and VALUE of MINERALS produced during the years ended  
31st December 1902 and 1903.

Mineral.	1902.			1903.		
	Quantity.		Estimated Value.	Quantity.		Estimated Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal ... ..	—	—	—	46,870	47,622	35,152
Gold ... ..	ozs. 194,170	kilos. 6,039	687,096	ozs. 231,872	kilos. 7,212	827,729
Lead ... ..	—	—	—	128	130	1,439
Silver ... ..	—	—	—	ozs. 20,715	kilos. 644	2,333
Total Value ... ..	—	—	687,096	—	—	866,653

There were 50 fatalities at mines during the year ended 31st March, 1904, but as it is not stated in what part of Rhodesia the deaths occurred, and the returns of persons employed relate to Matabeleland only, no death-rate has been calculated.

**St. Lucia.\***

A sulphur mine exists at Ventine in the Soufrière district, and an attempt is being made to ship the produce obtained therefrom in the crude state.

**Sarawak. (See BRITISH BORNEO.)****Somali Coast Protectorate.†**

Nothing definite is known as to the mineral resources of the country as it does not appear to have been prospected, but mica has been found and there are indications of iron ore.

**Straits Settlements.‡**

There are no mines of importance in the Straits Settlements proper, viz., Penang, Province Wellesley, Malacca and Singapore; the value of the alluvial tin from Malacca in 1901 was £136, and in 1902 only £60.

Laterite is quarried for road metalling in Singapore and Malacca, and granite in the islands to the east of Singapore.

\* Sir G. Melville. "St. Lucia Report for 1903." *Colonial Reports*—Annual, No. 443. [Cd. 2238–20.] London, 1904, p. 16.

† Consul-General Hayes Sadler, "Trade of the Somali Coast for the year 1898–1899." *Dipl. and Cons. Reports*, No. 2,384, Ann. Ser., 1900 [Cd. 1–21], and Acting-Commissioner Cordeaux "Report on the Trade and Commerce of the Somaliland for the year 1902–3 [Cd. 1935], 1904.

‡ Acting Governor Taylor. "Straits Settlements Report for 1902." *Colonial Reports*—Annual, No. 406. [Cd. 1768–11.] London, 1903, p. 19.

## TRANSVAAL—continued.

TABLE 373.

OUTPUT and VALUE of MINERALS during the years ended 31st December, 1902, and 1903.

Mineral.	1902.*			1903.		
	Quantity.		Value.	Quantity.		Value.
	Tons.	Metric Tons.	£	Tons.	Metric Tons.	£
Coal ... ..	1,419,940	1,442,727	637,640	2,012,211	2,044,502	877,900
Diamonds ...	carats 1,064	kilos. 22	2,402	carats 174,976	kilos. 36	239,700
Gold (Fine) ...	ozs. 1,718,921	kilos. 53,464	7,301,501	ozs. 2,972,897	kilos. 92,467	12,628,000
Salt ... ..	—	—	—	759†	771	4,400
Silver (Fine) ...	ozs. 122,573†	kilos. 3,812	13,025	ozs. 350,070†	kilos. 10,888	36,700
Other Minerals‡	—	—	104,443	—	—	259,200
Total ..	—	—	8,059,011	—	—	14,046,300

The table below affords further information concerning the output of gold.

TABLE 374.

Source of the gold.	Quantity of fine gold.	Value at £4·24773 per oz.
	Ozs.	£
Stamp mills at the mines ... ..	1,848,088	7,850,171
Chemical processes at the mines ...	1,047,452	4,449,301
Metallurgical and chemical works ...	74,041	314,498
Tailings Syndicates and non-crushing mines.	3,132	13,303
Alluvial workings ... ..	128	546
Other sources ... ..	56	238
Total ... ..	2,972,897	12,628,057

The above figures show the importance of the chemical processes for the extraction of gold, as 35 per cent. of the total quantity was obtained by chemical treatment.

TABLE 375.

FATAL ACCIDENTS at COAL, DIAMOND, and GOLD MINES during the year ended 31st December, 1903.

Mines.	Number of persons killed.			Death-rate p 1000 person employed.
	White.	Coloured.	Total.	
Coal ... ..	2	30	32	4·05
Diamond ... ..	—	11	11	5·38
Gold ... ..	61	249	310	4·42
Total for 1903 ... ..	63	290	353	4·41
Total for preceding year ..	30	136	166	3·88

\* Revised figures.

† Estimated quantity of fine silver contained in the gold bullion exported.

‡ These figures relate to the output of salt for the year ended 30th June, 1903.

§ Including coke, fireclay, limestone, sandstone, slate, bricks, &amp;c.

## TRANSVAAL—continued.

TABLE 376.

FATAL ACCIDENTS at COAL, DIAMOND, and GOLD MINES, CLASSIFIED according to cause, during the year ended 31st December, 1903.

Cause of Accident.	Persons Killed.					
	Coal Mines.		Gold Mines.		Diamond Mines.	
	Whites.	Coloured.	Whites.	Coloured.	Whites.	Coloured.
Explosives ... ..	—	—	20	56	—	—
Overwinding ... ..	—	—	—	—	—	—
Travelling in cage or skip ...	—	2	5	12	—	—
Struck by cage, skip or hauling rope.	—	—	6	14	—	—
Travelling by ladders ... ..	—	1	—	3	—	—
Falling in shafts, excavations, &c.	—	1	11	37	—	—
Falling of material ... ..	—	—	2	19	—	—
Fall of ground ... ..	1	14	3	58	—	—
Trucks and tramways ... ..	1	9	4	6	—	2
Boilers and steam pipes ...	—	—	—	2	—	—
Machinery ... ..	—	1	5	22	—	1
Directly caused by electricity	—	—	1	3	—	—
Miscellaneous ... ..	—	2	4	17	—	8
Total ... ..	2	30	61	249	—	11

The following Ordinances relating to mining were passed in the year 1903 :—

Explosives Law Amendment (No. 4).  
 Base Metals Law Amendment (No. 42).  
 Mining Certificates, with Regulations (No. 50).  
 Mines, Works and Machinery, with Regulations (No. 54).  
 Explosives Importation (No. 59).  
 Diamond Trade (No. 63).  
 Precious Stones (No. 66).

Ordinances Nos. 50, 59 and 63 are new ones, the others are amendments of existing laws.

In consequence of the increased depth of the workings, the questions of ventilation and sanitation in the mines are receiving considerable attention. According to the report of the Government Mining Engineer for the year ending 30th June, 1903,\* it appears from inquiries which have been made with regard to sanitary conveniences in use by the workpeople at the gold mines, that the "bucket system" is considered the most suitable.

\* Pretoria, 1903.



Trinidad.\*

*Asphalt.*—The output of pitch or asphalt from the deposit at La Brea during the year ended 31st March, 1904, has surpassed all previous records.

*Coal.*—The coal deposit explored in the Guanapo District by the Government is reported to be far more satisfactory than had been anticipated. Seams of fairly good quality have been found, and the yield promises to be good. Several private companies are making explorations for coal in different parts of the island.

*Glance Pitch.*—This material, also known as manjak, has been worked during the year at Marbella and Vistabella in Naparima, 786 tons valued at £1,964 having been exported.

*Petroleum.*—Extensive prospecting work for mineral oil has been carried on in the Guayaguayare district of Mayaro with encouraging results.

*Stone.*—There are several limestone quarries ; the most important are situated to the east of Port-of-Spain, Pointe Gourde, Carrera and Gasparillo Islands.

TABLE 377.

QUANTITY and VALUE of ASPHALT exported in the Years 1902-3 and 1903-4.

Mineral.	1902-1903.†			1903-1904.†		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asphalt, purified ... ..	11,427	11,610	22,854	9,866	10,224	19,732
„ raw ... ..	145,712	148,050	145,712	178,984	181,856	178,984
„ dried ... ..	1,997	2,029	1,997	2,585‡	2,626	3,446
Total value ... ..	—	—	170,563	—	—	202,162

Turks and Caicos Islands.§

The production of salt is the most important industry in these islands. It is obtained by the solar evaporation of sea water in shallow ponds on the coast. Most of it is exported to the United States and Canada.

TABLE 378.

QUANTITY and VALUE of SALT exported during the years 1902 and 1903.

Mineral.	1902.			1903.		
	Quantity Exported.		Value.	Quantity Exported.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Salt ... ..	50,205	51,011	22,196	54,748	55,626	23,678

\* *Blue Book for Trinidad*, 1903-4, AA 2; and Governor Sir H. M. Jackson, "Trinidad and Tobago Report for 1903-4."—*Colonial Reports*—Annual, No. 442, [Cd. 2238-19], London, 1904, pp. 7 and 16.

† Year ended 31st March.

‡ Equal to 3,590 tons of crude asphalt.

§ Governor Sir A. W. L. Hemming, "Turks and Caicos Islands Report for 1902."—*Colonial Reports*—Annual, No. 394, [Cd. 1388-18], London, 1903, and *Blue Book for Turks and Caicos Islands* for 1903.

### Uganda Protectorate.\*

What little is known about the mineral resources of Uganda may be summed up as follows :—Fragments of coal are found in the bed of the streams all round Mount Elgon ; there are traces of copper in Busoga ; iron ore is abundant in the Protectorate ; alluvial gold is known to exist in parts lying far from the railway, and there are deposits of salt at Toro in the Western Province. The revenue from the salt deposits for the year ending March, 1904, amounted to £180.

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### Wei-hai-wei.†

Thirty-four prospecting licences were granted during 1903, and it is stated that the Wei-hai-wei Gold Mining Company was working steadily during the year.

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West Indies. (See BARBADOS, DOMINICA, REDONDA, and TRINIDAD.)

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\* Sir H. H. Johnston, *Report on the Uganda Protectorate, Africa*, No. 7 (1901) [Cd. 671], London, 1901, p. 12, and Sadler, *General Report on the Uganda Protectorate, Africa*, No. 12 (1904). [Cd. 2250], London, 1904, p. 6.  
† Lockhart.—“ Wei-hai-wei, Report for 1903.” *Colonial Reports—Annual*. No. 419 [Cd. 1768-24], London, 1904. p. 20.

## FOREIGN COUNTRIES.

### Abyssinia.\*

*Coal.*—Workable lignite is said to occur at Debra, Libanos, and Ankober.

*Gold.*—This metal is obtained from the Wallega, Shankalla, and Benischongul districts. The gold exported from Addis Abbaba and Harrar in the year 1899–1900 was estimated to be worth £139,600, the amount of fine gold may be reckoned to have been 31,161 ozs., and of fine silver contained in the gold about 2,710 ozs.

*Iron Ore.*—The districts of Entoto Hamasen, Damot, Harrar, and Agomedder abound in iron ore, which is smelted locally.

*Salt.*—Mines at Arho in the Tittal country between Makallé and the Red Sea produce a large quantity of salt; the mineral is likewise obtained from Gojam. The estimated value of the salt produced in the whole of the Addis Abbaba district during the year 1899–1900 amounted to £18,700.

### Algeria.†

The three principal minerals raised in Algeria are iron ore, phosphate of lime and zinc ore. A considerable quantity of limestone is quarried, and the workings for salt are of some importance.

*Antimony Ore.*—This mineral is being worked at Hamimat.

*Iron Ore.*—Most of the iron ore, which is magnetite and manganiferous hæmatite, is produced by the Mokta-el-Hadid Mines near Bona and the Benisaf Mines near Tlemsen. The former produced 92,000 tons and the latter 391,000 tons in 1903.

*Marble.*—Numidian marble had won renown in the time of the Romans. The onyx marble produced by the Colony is of great beauty. One of the localities where it is found is Sidi-Hamza. Quarries at Filfila near Philippeville and at Ouled-Rahmoun in the district of Bona produce statuary marble as well as many coloured varieties. Other quarries are situated at Tekbalet and Oued Chouly in the Department of Oran.

*Petroleum.*—Work was carried on in 1903 at the petroleum wells of Ain-Zeft in the Department of Oran. The “Société des Pétroles Français” is laying down plant at St. Aimé for refining its products.

*Phosphate of Lime.*—The annual output has grown from about 5,000 tons in 1893 to 320,843 tons in 1903. The phosphate is quarried in the vicinity of Tébessa and also at Tocqueville and Bordj R'Dir in the Province of Constantine, and it is now the most important mineral product of Algeria.

*Salt.*—Nearly all the salt was produced from lakes in the Departments of Constantine and Oran.

*Zinc Ore.*—Calamine and blende are both worked and especially in the Department of Constantine.

TABLE 379.

PERSONS EMPLOYED at Mines and Quarries during the Years 1902 and 1903.

Year.	At Mines.	At Underground Quarries.	At Open Quarries.	Total.
1902	3,021	1,000	3,286	7,307
1903	3,504	1,100	3,286	7,890

\* Baird, “Report on the Trade of Addis Abbaba, and Harrar, Abyssinia.” *Dipl. and Cons. Reports* No. 2531, Ann. Ser., 1899–1900 [Cd. 352–27], 1900, with map.

† *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1902, and pour l'année 1903*; and Drummond-Hay, “Report on the Trade of Algeria for the year 1903.” *Dipl. and Cons. Reports*, No. 3226, Ann. Ser. [Cd. 1766–160]. London, 1904.



## ALGERIA—continued.

TABLE 380.

QUANTITY and VALUE of the MINERALS produced from Mines during the Years 1902 and 1903.\*

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony ore ... ..	39	12,000	490	81,600
Brown coal ... ..	285	3,424	140	1,681
Copper ore ... ..	1,955	178,185	100	12,000
Iron ore ... ..	525,012	5,036,426	588,893	5,748,645
Lead ore, argentiferous ... ..	26	2,762	499	29,935
Mercury... ..	92	3,818	—	—
Rock salt and salt from brine ...	27,263	563,961	26,329	500,275
Zinc ore ... ..	33,139	2,070,180	43,313	3,030,609
Total Value in Francs ...	—	7,870,756	—	9,404,805
" " £ sterling ...	—	314,830	—	376,192

TABLE 381.

QUANTITY and VALUE of MINERALS produced from Quarries during the Years 1902 and 1903.\*

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Clay ... ..	122,850	437,575	125,800	428,125
Flags ... ..	10,000	100,000	8,370	130,000
Gypsum ... ..	600	1,500	300	750
Limestone ... ..	32,400	765,600	34,750	837,650
Marble ... ..	375	75,000	700	129,000
Onyx... ..	150	40,000	67	17,920
Plaster and Cement... ..	35,500	721,500	33,000	701,750
Phosphate of lime ... ..	305,174	6,103,480	320,843	6,416,860
Sand and gravel ... ..	72,180	72,180	46,720	52,920
Stone for building ... ..	888,300	1,848,300	740,755	1,730,214
" (rough and broken) ... ..	1,415,000	1,388,000	1,078,650	1,052,400
Total Value in Francs ...	—	11,553,135	—	11,497,589
" " £ sterling ...	—	462,125	—	459,904

\* Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1902, and pour l'année 1903.

ALGERIA—continued.

TABLE 382.

DEATHS from ACCIDENTS during the Years 1902 and 1903.\*

Kind of Working.	1902.		1903.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate 1,000 Perso Employed
Mines... ..	3	.99	5	1.43
Underground Quarries ... ..	3	3.00	1	.91
Open Quarries ... ..	14	4.26	13	3.96
Total ... ..	20	2.74	19	2.41

Annam. (See INDO-CHINA.)

Arabia.

The Arab is not a miner by nature, and there is little or no working for miners on the great Arabian peninsula. In days gone by, according to Burton, gold mines were worked in the land of Midian.

Argentine Republic.†

All writers seem to agree that the mineral resources of the Argentine Republic are great; little, however, has been done to develop them, as very high fees have to be paid for licences to prospect and work in new districts. In addition to the ores of copper, gold, iron, lead, mercury, nickel, and silver, the Republic can produce asbestos, borax, coal, nitrate of soda, petroleum, salt, and sulphur. As railways are extended to the Andes, bringing facilities for working, the mining industry is sure to progress rapidly.

Some important development work in gold mining is reported to be taking place in the northern part of the Republic on the Bolivian frontier. Gold dredging to some extent is likely to be tried under the advice of New Zealand and Australian mining engineers.

Large quantities of salt are obtained from the brine of a huge salt lake near San Blas, some 800 miles south of Buenos Ayres. The output at the present time is about 25,000 tons a year.‡

Unfortunately the National Department of Mines and Geology at Buenos Ayres is unable to supply any statistics. The figures in the following table (No. 383) have therefore, no official sanction.

\* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1902, and pour l'année 1903.*  
† "Mineral Resources of the Argentine Republic," by James McKean Rowbotham, A.M.I.C.E. *Proc. Inst. C.* Vol. CXXVIII., 1896-7, Part II., and Harford "Finances of the Argentine Republic for the years 1902 and 1903." *Dipl. Cons. Reports*, No. 8131, Ann. Series [Cd. 1766-65], London 1904, p. 13.  
‡ Consul Ross. "Trade of Consular District of Buenos Ayres for the years 1901 and 1902." *Dipl. and Cons. Rep.* No. 2,767, Ann. Series [Cd. 786-71], p. 8, and No. 2961 [Cd. 1386-38].

## ARGENTINE REPUBLIC—continued.

TABLE 383.

QUANTITY and VALUE of COPPER produced during the Years 1902 and 1903, and of GOLD and SILVER during the YEAR 1901.

Metal.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
Copper (fine) ...	Metric Tons. 244*	£ 12,632†	Metric Tons. 137*	£ 7,830†
Gold‡ ...	Kilos. 45	6,160	—	—
Silver‡ ...	Kilos. 1,405	5,565	—	—

## Aruba. (See DUTCH WEST INDIES.)

## Austria-Hungary.§

As the Governments of Austria and Hungary publish separate official statistics, it has been thought advisable to maintain the distinction in the tables which follow. Further, it is convenient to refer to Bosnia and Herzegovina in this place, as these countries are administered by the common Ministry of Finance of Austria-Hungary, though not incorporated with the Empire.

*Brown Coal.*—Most of the provinces of Austria proper yield brown coal, but Bohemia is by far the largest producer, with an output in 1903 of 18,362,470 tons. The principal workings for brown coal are in the Tapolitz basin, where the seams often reach a thickness of 98½ feet (30 m.). These are of Lower Miocene age, and there are likewise seams of 3 feet thick of Upper Oligocene age which are worth working.

Styria, next in importance after Bohemia, produced about 2½ million tons of brown coal in 1903. The deposits are of Miocene age. Seams 50 feet to 100 feet in thickness (16 m. to 30 m.) are not uncommon, and in one place a seam is nearly 200 feet (60 m.) thick.

The principal brown coal mines in Hungary are situated in the counties of Nógrád, Borsod, and Hunyad, though there is a considerable output from the counties of Estergom, Komárom and Sopron.

*Coal.*—Austria proper has two great sources of coal supply: (a) Part of the great Moravian-Silesian-Polish basin, which it shares with Prussia and Russia; (b) North-Eastern Bohemia.

\* Return compiled by Henry R. Merton and Co., Ltd., London.

† Value of foreign copper in London market.

‡ The figures for gold and silver, which are for the year 1901, have been taken from the Report of the Director of the United States Mint for 1902. Later figures are not obtainable.

§ *Statistisches Jahrbuch des K. K. Ackerbau-Ministeriums* for 1903, Vienna, Part II., No. 1; *Magyar Statisztikai Évkönyv*, New Series, X. for 1902, Budapest, 1904; and information furnished by the Central Statistical Office of the Kingdom of Hungary.

|| *Die Mineral Kohlen Österreichs*, Vienna, 1903.



AUSTRIA-HUNGARY—*continued.*

(a.) The provinces of Moravia, Silesia, and Galicia furnished nearly 64 per cent. of all the coal of Austria proper in 1903; the coal mining industry is most largely developed in the Ostrau-Karwin district of Silesia, where there are 25 workable coal seams making up a total thickness of 72 feet (22 m.) of coal. Some of it is made into excellent coke.

(b.) In 1903 Bohemia supplied nearly 36 per cent. of all the coal of Austria proper. The main seam of the Kladno-Rahonitz basin is 20 feet to 36 feet thick.

Though the deposits are of comparatively little importance commercially, it is interesting from a geological point of view to note the fact that true coal is being worked in Austria in several of the subdivisions of the secondary rocks. Thus in Lower Austria coal is obtained from seams of Triassic, Liassic, and Upper Cretaceous age, and a coal of Cretaceous age is being mined in North-Western Moravia.

The principal coal regions of Hungary are in the counties Krassó-Szörény and Baranya.

*Gold.*—The bulk of the gold comes from mines in Hungary, and especially from the mineral region of Zalatna and from the neighbourhood of Nagybánya in the county Szatmár. Most of the gold ore raised in Austria in 1903 was obtained from a mine near Beneshaw, in Bohemia.\*

*Iron Ore.*—Austria on the contrary is the chief producer of iron. Among the Austrian provinces, Styria retains the first place with about 56 per cent. of the output, next comes Bohemia with 40 per cent. As regards Hungary the ores of this metal are worked in very many parts of the Kingdom, especially in the northern counties of Gömör and Szepes, and in the south-eastern counties of Krassó-Szörény and Hunyad.

*Lead Ore.*—Nearly 60 per cent. of the Austrian lead ore raised in 1903 came from Carinthia, and 32 per cent. from Galicia.

*Mercury.*—The famous quicksilver mine at Idria in Carniola has now been worked for upwards of five centuries; since 1580 it has belonged to the State. A little mercury is obtained from Hungary, and the metal has recently been discovered in Dalmatia.†

*Opal.*—The celebrated opal mines of Hungary are situated at Dubnik in the county of Sáros; they are worked by the State. The annual output is 10 to 12,000 carats.

*Ozokerite and Petroleum.*—Galicia is remarkable for two important products, mineral wax and mineral oil. The principal workings for the former are at Boryslaw in the Drohobycz district, which likewise has the most productive oil-wells.

*Salt.*—Both in Austria and in Hungary the salt trade is a Government monopoly. Rock salt is obtained at Wieliczka in Galicia and especially in the counties of Máramaros Alsó-Fehér and Kolnok-Doboka in Hungary, and in Transylvania; saliferous marl is treated by the lixiviation process in the Austrian Alps. On the shores of the Adriatic salt is extracted by solar evaporation from sea water.

*Silver.*—Bohemia and Hungary both produce silver. The Przibram mines in the former country have long been celebrated, not only as large producers of silver and lead, but also on account of their great depth.

\* Consul Wentworth Forbes. "Trade of Bohemia for the year 1903." *Dipl. and Cons. Reports*, No. 3255, Ann. Ser. 1904 [Cd. 1746-189], p. 7.

† Churchill. "Report on the Trade and Commerce of Trieste for the year 1901." *Dipl. and Cons. Reports*, No. 2762 Ann. Ser., London, 1902, p. 12.

AUSTRIA.

TABLE 384.

PERSONS EMPLOYED at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, arranged according to PROVINCE in which Employed, during the Years 1902\* and 1903.†

Province.						Persons Employed.			
						1902.		1903.	
						Total.	Percentage of the Total Number.	Total.	Percentage of the Total Number.
Austria, Lower	...	...	...	...	...	973	0·69	777	0·56
"    Upper	...	...	...	...	...	1,587	1·13	1,616	1·16
Bohemia	...	...	...	...	...	64,633	45·88	64,743	46·62
Bukowina	...	...	...	...	...	168	0·12	206	0·15
Carinthia	...	...	...	...	...	4,165	2·96	3,989	2·87
Carniola	...	...	...	...	...	2,575	1·83	2,310	1·67
Dalmatia	...	...	...	...	...	838	0·59	793	0·57
Galicia	...	...	...	...	...	4,798	3·41	4,988	3·59
Istria	...	...	...	...	...	1,191	0·85	1,083	0·78
Moravia	...	...	...	...	...	11,923	8·46	11,752	8·46
Salzburg	...	...	...	...	...	517	0·37	536	0·39
Silesia...	...	...	...	...	...	29,780	21·14	29,015	20·89
Styria	...	...	...	...	...	16,583	11·77	15,987	11·51
Tirol	...	...	...	...	...	1,128	0·80	1,086	0·78
Vorarlberg	...	...	...	...	...	1	0·00	1	0·00
Total	...	...	...	...	...	140,860	100·00	138,882	100·00

TABLE 385.

PERSONS EMPLOYED at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1902 and 1903.‡

Year		Coal.						Brown Coal.						Iron Ore.					
		No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
			Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.
1902	..	189	59,183	2,975	4,474	—	66,582	245	52,761	2,280	1,226	2	56,269	38	5,011	108	239	—	5,358
1903	..	141	59,698	2,611	4,363	1	66,663	242	51,469	2,441	1,152	3	55,065	37	4,619	101	220	—	4,940

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1902, Vienna, Part II., No. 2, p. 164.  
† Do. do. do. 1903, do. p. 164.  
‡ Do. do. do. do. pp. 166-169.

AUSTRIA—continued.

TABLE 385—continued.

Year.	Other Mines.						All the Mines.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Gen. Tot.
1902 .. .. .	98	11,094	873	670	15	12,651	530	137,999	6,235	6,609	17	140
1903 .. .. .	88	10,610	810	773	22	12,214	508	126,396	5,963	6,497	26	138

TABLE 386.

PERSONS EMPLOYED at SALT MINES and WORKS during the Years 1902 and 1903.\*

Country or Province.	Salt Mines.			Brine Evaporating Works and Sea Salt Works.					Total at Salt Mines and Works.				
	Men.	Young Persons.	Total.	Men.	Women.	Young Persons.	Children.	Total.	Men.	Women.	Young Persons.	Children.	Total.
Upper Austria ..	415	1	416	900	14	2	—	916	1,315	14	3	—	1,332
Salzburg .. ..	195	1	196	189	3	1	—	193	384	3	2	—	389
Bukowina .. ..	39	—	39	51	—	—	—	51	90	—	—	—	90
Styria .. .. .	128	—	128	318	6	—	—	324	444	6	—	—	450
Tyrol .. .. .	128	—	128	131	—	—	—	131	257	—	—	—	257
Dalmatia .. ..	—	—	—	567	310	80	565	1,522	567	310	80	565	1,457
Istria .. .. .	—	—	—	528	370	155	42	1,095	528	370	155	42	1,095
Galicia .. .. .	1,840	—	1,840	741	—	—	—	741	2,581	—	—	—	2,581
Totals for 1903 ..	2,741	2	2,743	3,425	703	238	607	4,973	6,166	703	240	607	7,716
Totals for 1902 ..	2,512	2	2,514	4,377	865	78	129	5,449	6,889	865	80	129	7,963

TABLE 387.

PERSONS EMPLOYED at OZOKERITE MINES and PETROLEUM WELLS during the Years 1902 and 1903.†

Province.	Kind of Workings.	1902.				1903.			
		Persons Employed.				Persons Employed.			
		Men.	Women.	Young Persons.	Total.	Men.	Women.	Young Persons.	Total.
Galicia...	Ozokerite ...	2,517	69	24	2,610	2,933	58	15	3,006
" ..	Petroleum ...	5,878	5	6	5,889	5,099	5	3	5,107

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1903, Vienna, Part II., No. 2, p. 179.  
† Do. do. do. do. do. No. 2, pp. 287 and 288.



## AUSTRIA—continued.

TABLE 388.

QUANTITY and VALUE of MINERALS produced from MINES, exclusive of SALT, OZOKERITE, and PETROLEUM, during the Years 1902 and 1903.\*

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum shale and vitriol ore ...	2,866	18,060	2,978	23,826
Antimony ore ...	18	3,271	41	3,005
Asphalt ...	897	40,720	1,273	54,000
Bismuth ore ...	7	11,305	14	18,103
Brown coal ...	22,139,683	109,334,380	22,157,521	100,380,387
Coal ...	11,045,039	96,900,125	11,498,111	97,435,374
Copper ore ...	8,455	536,672	12,688	530,869
Gold ore† ...	74	21,140	2,148	105,779
Graphite ...	29,527	1,813,726	29,589	1,882,503
Iron ore ...	1,744,298	14,422,005	1,715,984	14,766,560
Lead ore ...	19,055	2,661,658	22,196	3,263,179
Manganese ore ...	5,646	97,607	6,179	128,851
Quicksilver ore ...	90,040	2,127,427	83,321	2,209,188
Silver ore‡ ...	22,288	3,038,774	21,958	2,871,309
Sulphur ore ...	3,721	89,266	4,475	102,979
Tin ore ...	47	8,883	57	9,105
Tungsten ore ...	45	34,246	49	65,730
Uranium ore ...	46	189,633	45	85,118
Zinc ore ...	31,927	1,617,734	29,544	1,878,610
Total value in crowns ...	—	232,966,632	—	225,814,475
" " £ sterling ...	—	£9,698,861	—	£9,401,102

TABLE 389.

QUANTITY and VALUE of SALT produced during the Years 1902 and 1903.§

Province.	Rock Salt.	Salt from Brine.	Sea Salt.	Industrial Salt.	Value reckoned according to the Monopoly Prices.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Crowns.
Upper Austria ...	325	71,119	—	15,216	14,850,754
Salzburg ...	8	17,427	—	9,111	3,637,482
Bukowina ...	1,210	4,735	—	400	1,079,980
Styria... ..	3,260	16,143	—	4,140	3,929,000
Tyrol ...	22	15,989	—	2,937	2,304,762
Dalmatia ...	—	—	7,237	—	706,750
Istria ...	—	—	25,972	—	3,332,011
Galicia ...	27,334	52,441	—	83,988	17,521,379
Total for 1903 ...	32,159	177,854	33,209	115,792	47,362,118
" 1902 ...	32,456	166,158	38,512	73,681	£1,971,778
					46,656,067
					£1,942,384

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1903, Vienna, Part II., No. 1.

† 7 kilos of fine gold were obtained at the Metallurgical Works in 1902, and 8 kilos in 1903.

‡ 39,344 kilos. of fine silver were obtained at the Metallurgical Works in 1902, and 39,812 kilos in 1903.

§ Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1903, Vienna, Part II., No. 1, pp. 200 and 201.

AUSTRIA—continued.

TABLE 390.

QUANTITY and VALUE of OZOKERITE and PETROLEUM produced during the Years 1902 and 1903.\*

Provinces.	Mineral.	1902.		1903.	
		Quantity.	Value.	Quantity.	Value.
Galicia ...	Ozokerite ...	Metric Tons. 2,655	Crowns. 2,922,362	Metric Tons. 2,849	Crowns. 4,350,193
	Petroleum ...	520,847	14,676,651	672,508	17,101,312
	Total value in crowns	—	17,599,013	—	21,451,505
	„ £ sterling	—	£732,682	—	£893,068

TABLE 391.

ACCIDENTS at MINES, exclusive of OZOKERITE MINES and PETROLEUM WELLS, during the Years 1902 and 1903.†

Kind of Mines.	1903.			
	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accidents.
Coal (bituminous) ...	49	433	0·74	234,655
Brown coal ...	54	660	0·98	410,324
Iron ore ...	2	34	0·40	857,992
Salt ...	3	19	1·09	10,720
Other mines (excluding ozokerite mines, and petroleum wells).	6	82	0·49	36,093
Total for 1903 ...	114	1,228	0·80	312,459
„ preceding year‡ ...	216	1,070	1·51	162,852

TABLE 392.

ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS during the Years 1902 and 1903.§

Kind of Workings.	1902.			1903.		
	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.
Ozokerite ...	20	6	7·66	1	20	0·33
Petroleum ...	10	93	1·70	5	55	0·98

The accidents have been classified according to mineral worked, place, and cause.

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1903, Vienna, Part II., No. 2, pp. 287 and 288.  
† Do. do. do. do. do. pp. 194, 203 and 211.  
‡ These figures now include salt mines.  
§ Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1903, Vienna, Part II., No. 2, pp. 301 and 304.

AUSTRIA—continued.

TABLE 393.

DEATHS classified according to the MINERAL worked, and the PLACE of the ACCIDENT, during the Years 1902 and 1903.\*

Place of Accident.	Coal.	Brown Coal.	Iron Ore.	Rock Salt.	Other Minerals.	Total.
In perpendicular shafts ...	8	1	—	1	1	11
On inclined planes ... ..	7	2	1	—	—	10
In levels ... ..	14	5	—	—	1	20
At the working face ... ..	16	39	—	1	4	60
Above ground ... ..	4	7	1	1	—	13
Total for 1903 ... ..	49	54	2	3	6	114
„ preceding year ... ..	72	124	12	1	7	216

TABLE 394.

PERCENTAGES of DEATHS, arranged according to MINERAL worked and PLACE where the ACCIDENT happened, during the Years 1902 and 1903.†

Kind of Mines.	Percentage of Deaths.					
	Perpendicular Shafts.	Inclined Planes.	Levels.	At the Working Face.	Above-ground.	Total.
Coal ... ..	7·02	6·14	12·28	14·03	3·51	42·95
Brown coal ... ..	0·88	1·75	4·39	34·21	6·14	47·37
Iron ... ..	—	0·88	—	—	0·88	1·76
Rock salt ... ..	0·88	—	—	0·88	0·87	2·63
Other mines ... ..	0·87	—	0·88	3·51	—	5·26
Total for 1903 ... ..	9·65	8·77	17·55	52·63	11·40	100·00
„ preceding year ... ..	14·81	4·63	37·04	25·92	17·60	100·00

\* Statistisches Jahrbuch des k. k. Ackerbau Ministeriums for 1903, Vienna, Part II., No. 2, pp. 200-203.  
† Do. do. do. do. do. p. 195.



AUSTRIA—continued.

TABLE 395.

DEATHS classified according to CAUSE of ACCIDENT in MINES (exclusive of WORK  
OZOKERITE and PETROLEUM) during the Years 1902 and 1903.\*

Cause of Accident.	Number of Persons killed.		Increase or Decrease.
	1902.	1903.	
By falls of roof ... ..	27	56	+ 29
„ haulage or winding appliances ...	24	17	— 7
„ stones or things falling down ...	45	5	— 40
„ machines or tools ... ..	6	7	+ 1
„ falling down ... ..	17	7	— 10
„ firedamp explosions ... ..	6	4	— 2
„ ignitions of inflammable gas ...	—	—	=
„ suffocation ... ..	—	—	=
„ coal, stone, &c., falling or sliding down above ground.	1	2	+ 1
„ travelling in cage or climbing ladders	5	—	— 5
„ blasting ... ..	5	7	+ 2
While undercutting (holing) ... ..	2	1	— 1
„ timbering or walling ... ..	—	1	+ 1
By irruption of water ... ..	60	—	— 60
„ electric current ... ..	—	1	+ 1
„ other causes ... ..	18	6	— 12
Total ... ..	216	114	— 102

The preceding tables show that in the mines of Austria proper (exclusive of work ozokerite and petroleum) there were 114 deaths from accidents, or 102 less than in

The accidents at the ozokerite and petroleum workings are given in the fol table :—

TABLE 396.

NUMBER of DEATHS and of PERSONS seriously injured by ACCIDENTS at OZOKERITE and PETROLEUM WELLS, classified according to the PLACE where the Ac happened, during the Year 1903, and total for the preceding year.†

Place of Accident.	Number of Deaths from Accidents.	Number of Persons seriously injured.
In vertical shafts ... ..	—	3
In sinks and rises ... ..	—	
In levels ... ..	1	9
At the working face ... ..	—	—
On surface ... ..	5	63
Total for 1902 ... ..	6	75
„ preceding year	30	99

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1903, Vienna, Part II., No. 2, p. 196.  
† Do. do. do. do. do. pp. 301-304.

## AUSTRIA—continued.

Table 395 shows a large increase during the year in the number of deaths from falls of roof. Nearly 50 per cent. of the total number of deaths from accidents in Austrian mines in 1903 were due to this cause.

In the year 1903 there were 10 explosions of firedamp in mines in Austria, causing the death of 4 persons and serious injuries to 10. Of these 10 explosions, 2 happened in coal mines and 8 in brown coal mines.

TABLE 397.

Separate EXPLOSIONS of FIREDAMP or COAL DUST, arranged according to kind of MINES or other MINERAL WORKINGS, and cause of ACCIDENT during the Year 1903.\*

Cause.	Coal.	Brown Coal.	Salt.	Ozokerite Mines and Petroleum Wells.	Total.
1. Naked lights ... ..	1	4	—	—	5
2. Flame of safety lamp driven through gauze.	1	—	—	—	1
3. Ignition of gas by underground fire	—	2	—	—	2
4. Defective safety lamp ... ..	—	1	—	—	1
5. Gauze of safety lamp becoming red hot.	—	1	—	—	1
	2	8	—	—	10

## BOHEMIA.

As Bohemia employs such a large proportion of the miners in Austria, details concerning this province have been extracted from the official reports.

TABLE 398.

PERSONS EMPLOYED at the various classes of MINES in BOHEMIA during the Years 1902 and 1903.†

Kind of Mines.	Men.	Women.	Young Persons.	Children.	Total.	Percentage of Total Number of Persons Employed.
Coal ... ..	19,902	858	1,584	—	22,344	34.51
Brown coal ... ..	33,757	1,239	599	—	35,595	54.98
Iron ore ... ..	1,342	—	26	—	1,368	2.11
Other minerals ... ..	5,079	94	262	1	5,436	8.40
Total for 1903 ... ..	60,080	2,191	2,471	1	64,743	100.00
.. preceding year	60,032	2,287	2,314	—	64,633	100.00

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1903, Vienna, Part II., No. 2, p. 312.  
† Do. do. do. do. do. p. 199.

BOHEMIA—continued.

TABLE 399.

DEATHS at MINES during the Years 1902 and 1903.\*

Kind of Mines.	Number of Deaths from Accidents.	Average Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral produced per Death by Accident.
Coal ... ..	14	·63	293,891
Brown coal ... ..	44	1·24	417,324
Iron ore ... ..	—	—	—
Other minerals ... ..	3	·55	13,997
Total for 1903 ... ..	61	·94	369,159
„ preceding year	141	2·18	161,153

HUNGARY.

TABLE 400.

PERSONS EMPLOYED at all MINES (including SALT MINES) and SMELTING WORKS during the Years 1902† and 1903.‡

Year.	Men.	Women.	Children.	Total.
1902 ... ..	65,813	1,654	6,246	73,713
1903 ... ..	63,049	1,661	5,683	70,393

TABLE 401.

QUANTITY and VALUE of MINERALS and METALS produced in 1902§ and 1903.||

Mineral, Metal, or Product.	1902.		1903.	
	Quantity.	Value, Unit = 1,000 Cra.	Quantity.	Value, Unit = 1,000 Cra.
	Metric Tons.		Metric Tons.	
Antimony ore ... ..	200	16·2	205	24·7
Antimony, crude, and regulus ...	683	400·1	732	383·9
Asphalt ... ..	2,774	292·4	2,422	254·7
Auriferous and argentiferous lead and copper ore.	114,300	2,466·1	108,264	1,666·7
Auriferous silver ore ... ..	863	310·5	834	235·6
Bismuth ore ... ..	15	12·5	26	23·9
Briquettes ... ..	88,069	1,293·1	101,197	1,447·9

\* *Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums* for 1903, Vienna, Part II., No. 2, pp. 180 and 181. Also include with Austria in table on page 370.  
† Official Return furnished by the Central Statistical Office Budapest, and published in the *Magyar Statisztikai Évköny*, New Series X., 1902, Budapest, 1904, p. 141.  
‡ Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évköny*, New Series XI., 1903.  
§ Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évköny*, New Series X., 1902, Budapest, 1904, pp. 145–148.  
|| Official Return furnished by the Central Statistical Office, Budapest, and published in the *Magyar Statisztikai Évköny*, New Series XI., 1903, Budapest.



BOSNIA AND HERZEGOVINA.\*

According to Consul-General Freeman† the mining industry does not seem to have been very active in 1903, and there is, compared with the previous year, a decrease in the output of most of the minerals. Brown coal, copper ore, iron ore, manganese ore, and salt are the chief mineral products. Other minerals known to exist are the ores of antimony, arsenic, chromium (which is being worked), gold, lead, quicksilver, and zinc besides asbestos, asphalt, magnesite, and petroleum.

*Brown Coal.*—The principal collieries are at Zenica, Kreka, and Kakanj-Doboj; they are worked by the State. The most important seams at the two first named collieries are respectively 33 feet (10 metres) and 52½ feet (16 metres) thick. The coal is of Tertiary age. Coal-mining is a recent industry, for it only started in 1880, in which year 500 tons were raised; in 1903 the total output had risen to 467,962 tons, of which Zenica colliery produced 146,100 tons, Kreka colliery 241,900 tons, and Kakanj-Doboj colliery 64,523 tons. Some is exported to towns on the Adriatic.

*Chromic Iron.*—A large Viennese company has chromium mines at Dubostica.

*Copper Ore.*—The ores of this metal are mined and smelted at Sinjako.

*Iron Ore.*—The ironworks at Varèš under Government auspices are very successful and the country's output of iron ore in 1903 was 113,380 metric tons.

*Salt.*—The extraction of salt from natural brine springs dates back, at least, to Roman times, and probably very much further. As in the Austro-Hungarian Empire, the industry is a State monopoly. Numerous borings have proved that the deposits near Dolnja Tuzla are capable of yielding an ample supply of brine in the future, to say nothing of rock salt. Over 18 million gallons of the brine from Dolnja Tuzla were piped 6 miles to Lukavica in the year 1903,† and there made into soda by the ammonia process.

TABLE 403.

PERSONS EMPLOYED at MINES and SALT WORKS during the Years 1902 and 1903.

Year.	Coal Mines.	Iron Mines.	Other Mines.	Salt Works.	Total.
1902 ... ..	1,578	348	428	216	2,570
1903 ... ..	1,682	339	392	195	2,608

TABLE 404.

QUANTITY and VALUE of MINERAL produced during the Years 1902 and 1903.

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Brown coal ... ..	424,753	1,882,829	467,962	2,095,522
Chrome ore ... ..	270	14,839	147	7,355
Copper ore ... ..	4,711‡	63,418	1,672§	29,264

\* Official Return furnished by the "Bosn.-herc., Montanbureau," and published in the *Oesterreichische Zeitschrift für Bergbau und Hüttenwesen*, LII. Jahrgang, 1904.  
† "Trade of Bosnia and the Herzegovina for the year 1903." *Dipl. and Cons. Reports*, No. 3,297, Ann. Ser. 1: [Cd. 2236-41], p. 8.  
‡ 1,034 tons of this quantity were Fahlors.  
§ 600 " " "

Belgium.

Coal mining is the most important mineral industry in Belgium ; the ore mines are of little note, but the quarries of various kinds of stone have an output of considerable value.

Coal.—There are five coal-mining regions known respectively as the Couchant de Mons, Centre, Charleroi, Namur, and Liège. Of these the Charleroi region is the most productive, for it yields more than one-third of all the coal of Belgium.

The total output of coal in 1903 was 23,796,680 metric tons ; this amount exceeds that of the previous year by 919,210 tons, or more than 4%, and is the largest on record for Belgium.

Important discoveries of coal have been made by borings to the North and North-East of Hasselt,\* and it has been already ascertained that the new basin extends over an area of some 400 square miles ; it is hoped that it will continue as far to the West as Antwerp. Numerous borings have proved a total thickness of 33 feet (10 metres) of coal.

There are 37 coking plants at work, which produced 2,203,020 tons of coke, besides 46 factories which produced 1,686,415 tons of briquettes.

The workings for mineral in Belgium are classified in the official statistics under three heads : (1) Coal Mines ; (2) Ore Mines ; (3) Quarries.

TABLE 406.

PERSONS EMPLOYED.†

Kind of Workings.	1902.			1903.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal Mines ... ..	98,600	36,289	134,889	102,064	37,528	139,592
Ore Mines... ..	399	461	860	408	535	943
Quarries (Open and Under-ground) ... ..	—	—	36,469	—	—	37,117
Total ... ..	—	—	172,218	—	—	177,652

\* Lambert. *Le Grand bassin houiller et les nouvelles richesses minérales du Nord de la Belgique et du Sud de la Hollande.* Brussels. 1902; Stainier. "Etudes sur le bassin houiller du Nord de la Belgique." *Bull. Soc. Belge de Géologie.* Brussels, Vol. XVI., 1902, p. 77 and "Etat des Recherches dans le bassin houiller de la Campine," *Soc. Belge de Géologie*, 16 December, 1902.; and Harzé. "Le bassin houiller du Nord de la Belgique." *Soc. Belge des Ingénieurs et des Industriels*, 1902.

† *Statistique des Industries Extractives et Métallurgiques et des Appareils à Vapeur en Belgique pour l'année 1902 and l'année 1903*, published in the *Annales des Mines de Belgique*, Vol. IX. Brussels.

BELGIUM—continued.

TABLE 407.

PERSONS EMPLOYED at COAL MINES during the Years 1902 and 1903.\*

Year.	Under-ground.							Above-ground.							Total Under-ground and Above-ground.
	Males.			Females.			Total.	Males.			Females.			Total.	
	Ages.			Ages.				Ages.			Ages.				
	12 to 14.	14 to 16.	Above 16.	14 to 16.	16 to 21.	Above 21.		12 to 14.	14 to 16.	Above 16.	12 to 16.	16 to 21.	Above 21.		
1902 ...	2,261	4,604	91,651	—	—	84	98,600	1,389	1,189	25,659	2,609	3,669	1,474	36,289	134,889
1903 ...	2,391	4,585	95,033	—	—	55	102,064	1,540	1,533	26,682	2,709	3,596	1,468	37,528	139,592

The average output per underground worker was only 233 metric tons in the year 1903, compared with 357 metric tons in this country ; the reason of this is the small size of the seams, which on an average are only 2 feet 2·7 inches (68 c.m.) thick.

It is evident from Table 408 that within the next year or two female labour below-ground will cease in Belgium. Thirty years ago, from 8,000 to 9,000 girls and women were employed in the Belgian Collieries below-ground.†

TABLE 408.

FEMALES employed BELOW-GROUND at MINES in the Years 1891–1903.

Year.			Under 16 Years.	16 to 21 Years.	Above 21 Years.	Total.
1891 ...	...	...	683	2,285	723	3,691
1892 ...	...	...	219	1,957	719	2,895
1893 ...	...	...	44	1,505	623	2,172
1894 ...	...	...	—	1,076	542	1,618
1895 ...	...	...	—	673	595	1,268
1896 ...	...	...	—	291	597	888
1897 ...	...	...	—	87	549	636
1898 ...	...	...	—	19	405	424
1899 ..	...	...	—	—	289	289
1900 ...	...	...	—	—	191	191
1901 ...	...	...	—	—	120	120
1902 ..	..	...	..	..	84	84
1903 ...	...	...	—	—	55	55

\* Statistique des Industries Extractives et Métallurgiques et des Appareils à Vapeur en Belgique pour l'année 1903.  
† Harné. Annales des Mines de Belgique, Vol. VI., Brussels, 1901, pp. 603–605.



BELGIUM—continued.

TABLE 409.

COAL MINES.

PARTICULARS CONCERNING COAL SEAMS, OUTPUT OF COLLIERIES, and WAGES for the Year 1903.\*

District.	Mean thickness of Coal Seams.	Number of Days Coal was wound.		Total Output.	Total Number of Square Metres worked.	Output per Square Metre worked.	Annual Output.			Total Number of Days worked.	Wages.		Average Daily Wage.																																																																																																																																																																																																																																																																																																																																																																
		Average per Group of Collieries.	Total per Colliery.				Metric Tons.	Metric Tons.	Metric Tons.		Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.</

## BELGIUM—continued.

TABLE 410.

QUANTITY and VALUE of MINERALS produced from MINES and QUARRIES\* during the Years 1902 and 1903.†

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
		Francs.		Francs.
Barytes ... .. <i>Metric Tons</i>	33,000	231,000	21,000	147,000
Chalk ... .. <i>Cubic Metres</i>	390,700	538,150	501,920	629,700
China clay ... .. <i>Metric Tons</i>	500	5,000	1,750	16,750
Clay (other than China Clay). }	299,820	1,728,850	292,855	1,826,450
Coal ... .. "	22,877,470	302,027,860	23,796,680	309,002,800
Flint (for earthenware) <i>Cubic Metres</i>	17,430	107,400	16,250	123,800
Iron ore ... .. <i>Metric Tons</i>	166,480	679,700	184,400	865,450
Lead ore... .. "	164	12,850	90	7,650
Lime ... .. <i>Cubic Metres</i>	1,626,670	10,695,770	1,580,330	10,269,300
Manganese ore ... .. "	14,440	187,300	6,100	76,000
Ochre ... .. <i>Metric Tons</i>	200	4,000	200	4,000
Phosphate of lime ... .. "	135,850	1,489,240	184,120	1,721,500
Phosphatic chalk ... <i>Cubic Metres</i>	315,200	1,414,600	350,250	1,526,200
Pyrites ... .. <i>Metric Tons</i>	710	3,200	720	3,250
Quartz (for earthenware) ..	—	—	2,000	8,000
Sand ... .. <i>Cubic Metres</i>	722,775	1,289,020	724,495	1,274,750
Slate ... .. { <i>Number</i>	37,120,000	1,342,200	38,953,000	1,466,350
	20,615	90,640	9,505	35,500
Stone, &c. :—				
Buildingstonedressed <i>Cubic Metres</i>	238,924	16,124,970	282,223	17,586,250
Dolomite ... .. "	39,140	66,760	43,600	57,400
Flags ... .. <i>Square Metres</i>	81,330	613,680	107,660	644,900
Gravel and broken stone. } <i>Cubic Metres</i>	7,705	28,600	8,935	20,700
Hone stones and scythe stones. } <i>Number</i>	122,300	79,300	134,620	79,850
Limestone ... .. <i>Cubic Metres</i>	226,220	467,790	210,250	376,900
Marble ... .. "	15,490	2,542,550	16,735	2,683,700
Paving stone... .. <i>Number</i>	110,103,000	12,009,340	111,318,000	12,065,900
Rough and broken stone. <i>Cubic Metres</i>	2,481,195	5,807,800	2,758,010	6,135,700
Zinc ore... .. <i>Metric Tons</i>	3,852	190,520	3,630	242,200
Total value in Francs ... ..	—	359,778,090	—	368,897,950
" " £ sterling ... ..	—	14,391,124	—	14,755,918

\* Excluding the two Flanders and the Province of Antwerp which only furnish Tertiary clays for making bricks and tiles, and sand used in making glass and for other purposes.

† *Statistique des Industries Extractives et Métallurgiques et des Appareils à Vapeur en Belgique, pour l'année 1902 and l'année 1903*, and published in the *Annales des Mines de Belgique*, vol. ix., Brussels.

BELGIUM—continued.

TABLE 411.

NUMBER OF DEATHS FROM ACCIDENTS AT MINES AND QUARRIES during the Years 1902 and 1903.\*

Year.	Kind of Workings.	Under-ground.	Above-ground.	Total.	Number of Deaths per 1,000 Persons Employed.		
					Under-ground.	Above-ground.	Total.
1902 ... ..	Coal mines ... ..	122	22	144	1.24	.61	1.07
" ... ..	Ore mines ... ..	—	—	—	—	—	—
" ... ..	Quarries (open and underground).	—	—	1†	—	—	.03
1903 ... ..	Coal mines ... ..	136	23	159	1.33	.61	1.14
" ... ..	Ore mines ... ..	—	—	1	—	—	1.06
" ... ..	Quarries (open and underground).	—	—	31†	—	—	.84

With a view to combating the disease of ankylostomiasis, which is prevalent amongst the miners in the Province of Liège, the Belgian Government has recently (24th October, 1904) issued a Decree‡ providing for the examination of mines, and containing stringent sanitary regulations to be observed at mines which are recognised as infected.

Bohemia. (See AUSTRIA-HUNGARY.)

Bolivia.§

Bolivia is remarkable as being the great silver-producing country of South America; it likewise yields antimony, bismuth, copper, gold, manganese, and tin, besides a little borax.

*Bismuth.*—This mineral is obtained from the Chorolque mines in the department of Potosi.

*Copper Ore.*—The copper ore of the Corocoro district is rich enough to pay heavy transport expenses to Mollendo (Peru), whence it is shipped to Europe.

*Gold.*—The precious metal is extracted from alluvial gravels, especially in the Eastern valleys of the Cordillera Real, in the upper branches of the La Paz river, and in valley radiating from Mount Sorata. Veins of auriferous quartz are being worked with profit in the Araca Mountain, over against Illimani.

*Silver.*—The richness of the silver mines of the Potosi district has become proverbial; a few years ago more than one-half of the silver was produced by the Huanchaca mines.

*Tin Ore.*—There are four tin-producing districts in Bolivia, viz., La Paz, Oruro, Potosi, and Chorolque; the tin ore is obtained chiefly from veins. In 1903 the mines in the Oruro district produced 2,549 statute tons of dressed tin ore containing 1,713 tons of metal.

\* *Op. cit.*, pour l'année 1902 and l'année 1903.  
† Not stated whether the accidents happened under-ground or above-ground.  
‡ Published in *Moniteur Belge*. Journal Officiel, 4th November, 1904, p. 5578.  
§ Consul St. John, "Trade, &c., of Bolivia for the year 1895." *Dipl. and Cons. Reports*, No. 1841; Ann. Ser., 18 [C. 8277-59], and Sir Martin Conway, "Some of the undeveloped resources of Bolivia." *Jour. Soc. Arts*, vol. xlviii., 1891, p. 236.  
|| Pasley, "The Tin Mines of Bolivia." *Trans. Inst. M. and M.*, vol. vii., 1898-99, p. 77. Roberts, "Chorolque Tin Mines and Alluvial Deposits, Bolivia," *Ibidem*, vol. ix., 1900-01, p. 372; Frochof "L'étain en Bolivie." *Annales des Mines*, vol. xix., 1901, p. 186; and *Eng. Min. Jour.*, vol. lxxvii, No. 6, New York, 1904, p. 244.



## BRAZIL—continued.

*Coal.\**—There are deposits of coal in Rio Grande do Sul, Santa Catharina and Paraná, and the Government has appointed a commission with a view to ascertain their value and availability for practical purposes.

*Diamonds.*—The most important diamond districts in Brazil are Diamantina, Grao Mogul, Chapada Diamantina, Bagagem, Goyaz, and Matto Grosso. The value of the precious stones (mostly diamonds) which were exported in 1903 amounted to £113,582.

*Gold.†*—The State of Minas Geraes, which contains the famous mines of St. John del Rey and Ouro preto, is the principal gold producer. Dredging has been started in the Coxipó-de-ouro River, and a concession has been granted to a New Zealand Syndicate for similar work in the River Piracicaba.

Gold has also been found in Northern Brazil on the borders of French and British Guiana, which are both auriferous.

*Iron.‡*—The deposits of iron ore in the State of Minas Geraes are particularly rich and extensive.

*Manganese§* mining is an industry of recent date in Brazil, as no ore was raised until 1894. The principal workings are at Miguel Burnier, Queluz, Sao Goncalo and Piquiry in the province of Minas Geraes, respectively 287 miles (462 kil.) and 308 miles (496 kil.) from Rio. There are also mines near Nazareth, 50 miles to the west of Bahia, and immense and easily accessible deposits at Urucum in the Matto Grosso district.

*Monazite Sand||* is obtained near the town of Prado in the north of the State of Bahia, and the trade there remains in the hands of one firm; in 1903 the quantity shipped from Bahia was 1,834 tons, the greater part of which was consigned to Germany. Discoveries of Monazite have recently been made in the States of Espírito Santo and Rio de Janeiro.

*Phosphate of Lime.*—This mineral exists on the Island of Rata, near the Island of Fernando da Noronha.

*Salt.¶*—The quantity exported from Sergipe in 1901 was 11,535 metric tons, valued at £6,474.

TABLE 413.

QUANTITY and VALUE of MINERALS produced and exported during the Years 1902 and 1903.\*\*

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
Gold (bar) exported ...	Metric Tons. Kilos. 3,971	£ 432,706	Metric Tons. Kilos. 4,302	£ 468,591
Manganese ore (exported) ...	157,295	221,262	161,926	248,010
Monazite (exported) ...	1,205	53,661	3,299	74,139
Precious stones (exported)...	—	110,540	—	113,582
Salt ... ..	(a)	—	(a)	—

\* Acting Consul-General Rhind, "Trade of Rio de Janeiro for the year 1903." *Dipl. and Cons. Reports*, No. 3,283, Ann. Ser. 1904 [Cd. 2236-27], p. 14.

† Rhind, *op. cit.*, pp. 19 and 20, and Consul Churchill, "Trade of Pará for the years 1898 and 1899." *Dipl. and Cons. Reports*, No. 2,389, Ann. Ser. 1900 [Cd. 1-26], p. 6.

‡ Rhind, *op. cit.*, p. 8.

§ Rhind, *op. cit.*, p. 35, and H. K. Scott, "The Manganese Ores of Brazil." *Jour. Iron and Steel Institute*, Vol. LVII, 1900, p. 179.

|| Consul Medhurst, "Trade of Bahia for the year 1903." *Dipl. and Cons. Reports*, No. 3,256, Ann. Ser., 1904 [Cd. 2236-27], pp. 8, 10 and 11.

¶ Consul Medhurst, "Trade of Bahia and Sergipe for the year 1901." *Dipl. and Cons. Reports*, No. 2,888, Ann. Ser. 1901 [Cd. 786-192], pp. 10 and 14.

\*\* Rhind, *op. cit.*, pp. 25 and 26.

(a) Not stated.

**Bulgaria.\***

Bulgaria possesses fairly rich deposits of coal and lignite ; the ores of copper, iron, lead, and manganese are known to exist, but are not yet worked. Gold is obtained in many places from the sand of rivers. Limestone and marble are quarried on a small scale.

*Lignite.*—The State works lignite mines at Pernik and Bobovdol. The Pernik colliery is about 19 miles from the capital, with which it is connected by a railway, and it can therefore be worked to advantage. The Bobovdol colliery is far from any railway, and is worked to supply local wants only, the total output being only 2,000 tons a year.

The Trévna coalfield, 38 miles from Tirnovo, likewise lacks a railway for getting rid of its produce, and is worked on a very limited scale indeed.

TABLE 414.

## PERSONS EMPLOYED at the PERNIK LIGNITE MINES.

Year.					Number of Persons Employed.
1902	...	...	...	...	1,372
1903	...	...	...	...	1,688

TABLE 415.

## QUANTITY and VALUE of LIGNITE produced at the PERNIK MINES during the Years 1902 and 1903.

Year.					Quantity raised.	Value.
					Metric Tons.	
1902	...	...	...	...	128,045	{ Francs ... 1,144,772 £ sterling ... 45,791
1903	...	...	...	...	113,250	{ Francs ... 1,047,004 £ sterling ... 41,880

TABLE 416.

## DEATHS at the PERNIK LIGNITE MINES during the Years 1902 and 1903.

Year.					Number of Deaths.	Death-rate per 1,000 Persons Employed.
1902	...	...	...	...	3	2.19
1903	...	...	...	...	—	—

\* Official information furnished by the Chief of the Section of Mines of the Ministry of Commerce and Agriculture, Sofia.

### Cameroons.\*

*Salt*.—Important brine springs are known in the Keaka district and near the Cross River.

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### Canary Islands.

Lava and consolidated volcanic ash are quarried in various places for supplying building stone and paving slabs.

Loose cinders, dug from the sides of volcanic cones, are utilised for the manufacture of big blocks of concrete.

Pumice stone is obtained from the flanks of the Peak of Teneriffe and exported into England. 30 tons valued at 300 *pesetas* (£12) were obtained in 1903.†

Limestone for local use is quarried in Fuerteventura, and to a small extent in Grand Canary. This latter island has a set of pans in which salt is obtained from sea-water by solar evaporation.

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### Celebes (See DUTCH EAST INDIES).

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### Chili.

The wealth of Chili is largely due to its mineral treasures, of which nitrate of soda is the most important.

Other important exports are: borate of lime, copper, gold and gold ore, iodine, manganese ore, and silver. The total value of the minerals exported from Chili in 1903 amounted to £12,823,269, and it appears from Consul-General Sir Berry Cusack-Smith's report that over 31 per cent. of this amount was for the United Kingdom, 21 per cent. for Germany, 17 per cent. for the United States, and 15 per cent. for France.‡

*Borate of Lime*.†—The borate deposit of Ascotan in the interior of Antofagasta is at present the most productive in Chili. Valuable deposits, containing more than 600,000 tons of the mineral, are stated to exist within reach of the Port of Taltal, but the latter will remain undeveloped until the demand which is amply supplied at present by Antofagasta and Peru increases.

*Coal*.§—The principal coal-fields are South of Concepcion. The coal, which is of Eocene age, has been extensively worked for many years at Coronel and Lota. Still further South there is coal of Miocene age extending to the Straits of Magellan.

*Copper*.§—Copper mining, once the chief mineral industry of the country, is still of considerable importance. The copper resources of the country are said to be great.

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\* Buchanan, "Report on the German Colonies for the year ending 30th June, 1901." *Dipl. and Cons. Reports*, Ann. Ser. No. 2,790 [Cd. 786-94]. London, 1902, p. 14.

† *Estadística Minera de España correspondiente al año de 1903*, Madrid, 1904, p. 90. These figures are also included with Spain.

‡ Vice-Consul Rowley, "Trade of Chili for the year 1900." *Dipl. and Cons. Reports*, No. 2,700, Ann. Ser., 1901, pp. 22 and 29 and Consul-General Sir Berry Cusack-Smith, "Trade of Chili for the year 1903." *Dipl. and Cons. Reports*, No. 3,300, Ann. Ser. 1904 [Cd. 2236-51].

§ Consul-General Sir Berry Cusack-Smith, "Trade of Chili for the year 1899." *Dipl. and Cons. Reports*, No. 2,481, Ann. Ser. 1900 [Cd. 1,118].



The exportation of this mineral is prohibited by the Government, and the quantity obtained is sold and distributed among the southern parts of Chili. In 1903, 9,842 metric tons were sent from the sub-port of Punta Pichalo for distribution.\*

**Nitrate of Soda.**†—This industry continues to flourish. In the year 1903 there were 86 saltpetre works in operation, of which 72 were in Tarapacá; they produced 1,497,177 metric tons of nitrate of soda and 157 metric tons of iodine. Compared with the previous year, in which the output of nitrate was 1,358,270|| tons, there is an increase of 138,907 tons, and in iodine an increase of 27 tons. The diggings and works afforded employment to 24,445 persons, of whom 17,398 were Chilians, 2,795 Peruvians, and 3,317 Bolivians; the remaining 935 persons belonged to various nationalities. The principal ports at which the nitrate is shipped are Iquique, Caleta Buena, and Tocopilla.

Some very interesting reports by Dr. A. Plagemann,‡ and by Bergassessor Dr. Semper and Dr. Michels,§ respectively, concerning the nitrate industry of Chili, have recently (1904) been published in Germany.

**Salt.**†—A bed of salt of unknown thickness and extending over an area of more than 120 square miles is being worked near Punta de Lobos. The export was over 10,240 tons in 1903.

**Sulphur.**¶—¶¶The sulphur is obtained from the mines near Arica as well as from the deposits at Taltal, but as the latter are situated at too great a distance from the port to be worked at a profit the operations are reduced to the extraction of sufficient mineral for the manufacture of powder used in excavating "Caliche" (the raw material from which nitrate of soda is manufactured).

TABLE 417.

QUANTITY and VALUE of MINERALS exported during the Years 1902 and 1903.\*\*

Description of Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony ore ... ..	1	1,350	—	—
Borate of Calcium ... ..	14,327	1,355,511	15,732	2,202,473
Borax ... ..	—	35	1.5	370
Coal ... ..	900,000††	††	900,000††	††
Cobalt ore ... ..	464	72,791	278	41,670
Copper, ingots ... ..	21,197	13,857,823	24,250	16,975,035
" matte ... ..	2,094	585,852	—	—
" ore ... ..	22,622	2,406,241	20,696	2,558,426
" precipitate ... ..	1	700	7	3,485
Copper and Gold, ingots ... ..	—	—	12	826
" " " ore ... ..	22	6,561	12	5,939
" " " matte ... ..	73	32,637	—	—
Copper and Silver ore ... ..	133	33,767	71	49,812
Copper, Gold, and Silver ore... ..	2	396	20	9,860

\* Cusack-Smith *op. cit.* for 1903, p. 11.

† *Memoria del Delegado Fiscal de Salitreras presentada al Señor Ministro de Hacienda en 1904*, Santiago de Chile, 1904, p. 83, and Anexos pp. 69, 75, and 87.

‡ *Der Chile Salpeter, Der Saaten-, Dünger- und Futtermarkt*, S.W., 29, Berlin.

§ *Die Salpeterindustrie, Zeitschr., B.H. S.W.*, Vol. lii, Jahrgang, 1904, Berlin.

¶ Corrected figures.

¶¶ Cusack-Smith, *op. cit.* for 1903, p. 13.

Official Return furnished by the "Sociedad de Fomento Fabril," Santiago, and published in the *Estadística Comercial de la Republica de Chile correspondiente al año de 1902*, Valparaiso, 1903, pp. 161-164, and corresponding publication for 1903.

†† Estimated quantity produced, value not stated. The quantity of coal exported in 1903 was only 25 tons, valued at 557 dollars.

CHILI—continued.

TABLE 417—continued.

QUANTITY and VALUE of MINERALS exported during the Years 1902 and 1903—continued

Description of Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Copper, Gold, and Silver matte ...	220	131,745	—	—
„ „ „ „ precipitate...	—	—	330	9,900
Copper and Silver matte ... ..	94	49,078	—	—
Copper, Silver, and Lead ore... ..	75	15,872	26	9,142
Gold ... ..	Kilos. 762	1,337,020	Kilos. 220	396,436
Gold ore... ..	115	50,453	17	8,614
„ precipitate ... ..	Kilos. 4,909	236,019	Kilos. 5,584	251,280
Gold and Silver ores ... ..	610	244,245	1,190	595,231
„ „ „ precipitate ... ..	Kilos. 310	25,657	Kilos. 204	10,200
Iodine ... ..	244	3,055,087	351	4,384,700
Iron ore ... ..	22	1,000	—	—
Lead ... ..	—	—	—	64
Lead, silver ... ..	99	48,294	—	—
Lead and Vanadium Ores ... ..	—	—	2	2,000
Manganese ore ... ..	12,990	389,700	17,110	684,416
Nitrate of Soda... ..	1,330,598	126,406,771	1,452,283	142,323,734
Salt ... ..	Kilos. 138	10	—	—
Silver, ingots ... ..	Kilos. 31,812	1,654,502	Kilos. 5,011	250,538
„ ore ... ..	114	69,367	53	46,915
„ precipitate ... ..	Kilos. 86	5,212	—	—
„ sulphide... ..	176	536,262	17	66,528
Silver and Cobalt Ores ... ..	—	—	2	2,000
Silver and Lead ores ... ..	161	9,500	102	10,180
Sulphur... ..	32	3,200	130	12,958
Zinc Ore ... ..	—	—	60	2,500
Other Minerals... ..	—	29,945	—	61,335
Total Value in Dollars ...	—	152,652,603*	—	170,976,567
„ „ „ £ sterling ...	—	£11,448,945	—	£12,823,242

\* Excluding 357 dollars, the value of coal exported.



## China.\*

China is rich in many minerals and more particularly in coal, which is widely distributed throughout the vast empire, and especially in the provinces of Pechili, Shan-si, Shan-tung, Ho-nan, and Hu-nan; indeed the richness in coal seems to be unparalleled. In many provinces iron ore is likewise abundant.

Among other minerals may be mentioned the ores of antimony, copper, gold, iron, lead, quicksilver, silver, tin, and zinc, besides petroleum, salt, and sulphur. A good general idea of the distribution of the mineral wealth of China is obtainable from a map accompanying some articles by Mr. Lynwood Garrison.†

The coal-fields of north-eastern China, and especially those of western Chili and eastern Shansi, have been described by Mr. Drake.‡

In 1903, 3,435 tons of antimony and 3,234 tons of antimony ore were obtained from the native mines of Hunan.§

The output of coal in 1903 from the Kaiping collieries in the province of Pechili was 700,000 tons.§

The province of Kuangsi has deposits of coal and the ores of antimony, gold, and tin,|| but this mineral wealth remains untouched, and the provincial regulations make mining by foreigners impossible.

An installation, under German management, has been erected at Wuchang, in the province of Hupe, to concentrate lead and zinc ores, which is capable of treating 75 tons of ore daily. The iron mines at Ta-yeh shipped 50,000 tons of ore to Japan in 1903, and a large quantity was sent to the ironworks at Hanyang in the province of Kiangsi. The daily output of pig iron from the Hanyang works is about 120 tons.¶

The province of Sze-chuan,\*\* in the extreme west, is remarkable for its salt and natural gas. The annual output of the brine wells of Tze-liu-ching in Sze-chuan is estimated to be about 178,000 tons of salt.

The province of Chi-li†† has yielded gold for many centuries. The metal occurs in quartz veins and in alluvial deposits; the output in 1898 was 50,000 ozs.

Coal and the ores of gold, iron, lead and silver are said to abound in the province of Fokien. The goldfields in the Shao-wu district have been surveyed in 1903, and are reported to be very valuable.‡‡

The province of Kwei-chau§§ is rich in coal, ores of copper, iron, and quicksilver.

The province of Shan-si||| is remarkable for its great wealth of coal. The total annual output, reckoned at 50,000 tons in 1900, is no index of the great resources of the coalfields. The Peking Syndicate's new mineral line from Ching-hua to Tao-kou is now completed and will be a great advantage so far as the working of the anthracite deposits of the province of Shansi is concerned. Tse-chou on the Shansi plateau is reported to be one of the richest coal and iron regions in the world.

The province of Yunnan produced 65 tons of tin valued at £4,387 from its mines at Chao Tung, An Ning, and other places in 1903, and also 280 tons of lead (pig) valued at £3,905, which were exported from Chung-King. Salt is obtained from mines and brine wells near Pu Erh, and some of it is exported to the British Shan States and French Laos.¶¶

\* The "salt wells of China." *Jour. Soc. Arts*, Vol. XLVI., 1898, p. 385.

† Fearon and Allen.—"The Chinese, and recent industrial progress in China." *Eng. Mag.*, Vol. XVI., 1898, p. 166.

‡ M.R.D.—"Chinese Minerals." *The Investors' Review*, Oct. 1897, p. 216.

§ Jamieson.—"Coal and Iron in Eastern China." *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 365.

¶ Kurita.—"Coal and Iron Deposits of Eastern China." *Eng. Min. Jour.*, Vol. LXV., 1898, p. 491.

†† "The Mining and Industrial Development of China." *Mining and Metallurgy*, Vol. XXI., 1901, p. 65.

‡‡ *Trans. Am. Inst. M.E.*, vol. xxxi., 1901.

§ Jamieson, "Foreign trade of China for the year 1903." *Dipl. and Cons. Reports*, No. 3,280, Ann. Ser., 1904 [Cd. 2236-24].

¶ Fox, "Trade of Wuchow for 1902." *Dipl. and Cons. Reports*, No. 3,006, Ann. Ser., 1903 [Cd. 1386-83], p. 5 and p. 13.

§§ Jamieson, *op. cit.* No. 3,280.

||| Upcraft, "The Salt Wells of Sze-chuan, China." *Eng. Min. Jour.*, Vol. LXIX., 1900, p. 525; and Murdoch, "Notes on

Brine and Oil Wells in Western China." *Trans. Inst. M. and M.*, Vol. IX., 1900-01, p. 362.

†† Hoover, "Metal Mining in the Provinces of Chi-li and Shantung, China." *Proc. Inst. Min. and Met.*, Vol. VIII., 1900, pp. 324-331.

‡‡ Consul Mansfield, "Trade of Amoy for the year 1899." *Dipl. and Cons. Reports*, No. 2,502, Ann. Ser., 1900 [Cd. 1-139],

p. 8, and Jamieson, *op. cit.*, No. 3,280.

§§ Prospectus of the Anglo-French Quicksilver and Mining Concession (Kwei-chau province) of China, Ltd., March, 1899.

¶ Drake, "The Coalfields around Tse Chou, Shan-si." *Trans. Amer. Inst. M. E.*, New York, 1900, and Jamieson, "Trade

of Tientsin for the years 1900-03." *Dipl. and Cons. Reports*, No. 3,127, Ann. Ser., 1904 [Cd. 1766-61].

¶¶ Acting-Consul Sly, "Trade of Chung King for the year 1903." *Dipl. and Cons. Reports*, No. 3,290, Ann. Ser., 1904

[Cd. 2236-34], and Acting-Consul Carey, "Trade of Ssumao and Mengtee for the year 1900." *Dipl. and Cons. Reports*,

No. 2,741, Ann. Ser. 1902 [Cd. 786-45].



## CHINA—continued.

The province of Shan-tung\* possesses deposits of coal, copper, diamonds, gold, iron, lead, and silver. The first-named mineral is the most important; the Fangtzu coal mine having a daily output in 1903 of 300 tons. An extensive bed of hæmatite in the neighbourhood of the I-chou-fu coalfield, which can be worked opencast, may be of importance to Kiao-chou in the future.

In the province of Kiangsi the output of the Pinghsiang Collieries is at present about 600 tons a day, but as soon as further railway facilities are completed it is anticipated that this amount will be increased to 2,000 tons. The coal obtained is used principally for the Hanyang ironworks. Near Siangtan a greater development of the iron mines is contemplated.† Copper is mined to some extent in the province.

No mineral statistics are published by the Chinese Government.

The Director of the United States Mint states that 13,138 kilos. of fine gold of the estimated value of £1,792,977 were produced in 1902.‡

## Cochin China. (See INDO-CHINA.)

## Colombia.§

*Asphalt.*—A deposit of asphalt is being worked near Chaparral, Tolima, and about 2,000 tons are being shipped per annum.

*Coal.*—Coal is mined on a small scale only, though extensive beds of bituminous coal occur in various parts of the country.

*Copper.*—Deposits of copper ore are known to exist, but they are unworked.

*Emeralds.*—Colombia holds almost a monopoly of the trade in these gems. The famous mines of Muzo in the Boyacá district, have been worked continuously for more than three centuries. The other emerald mines, which were formerly worked by the Spaniards, are Cosquez and Somondoco. The value of the production in 1903 is estimated at £20,000.

*Gold.*—This is the most important mineral of the country. The precious metal is obtained by hydraulic mining, by dredging the beds of existing rivers, and by working auriferous veins. Antioquia, Cauca, and Choco are the principal mining districts.

*Manganese ore.*||—This ore is worked about 40 miles east of Colon.

*Salt.*—Rock salt is mined near Bogota.

*Silver.*—Tolima is the principal district of the silver mines.

TABLE 418.

QUANTITY and VALUE of GOLD and SILVER‡ produced during the Years 1901 and 1902.

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
Gold (Fine) ... .. Kilos.	4,215	£ 575,216	3,796	£ 517,988
Silver (Fine) ... .. Kilos.	58,537	231,828¶	55,269	193,347¶

\* Buchrucker, "Ueber eine bergmännische Forschungsreise in der Provinz Shantung." *Zeitschr. f. prakt. Geologie*, 1899, p. 206, and Jamieson, *op. cit.*, No. 3,280.

† Consul Glennell. "Trade of Kinkiang for the year 1902-03." *Dipl. and Cons. Reports*. No. 3293. Ann Ser. 1901 [Cd. 2236-37].

‡ *Report of the Director of the United States Mint for the year ended June 1903*, Washington, 1903, p. 145.

§ Granger and Treville, "Mining Districts of Colombia." *Trans. Am. Inst. Min. Eng.*, Vol. XXVIII., 1898; and Consul Dickson. "Trade of Colombia (excepting the Panama District) for year 1901." *Dipl. and Cons. Reports*, No. 2,74 Ann. Ser. 1902 [Cd. 786-51], and *ibid* for 1903, No. 3114 [Cd. 1766-48].

|| *Trans. Am. Inst. Min. Eng.*, Vol. XXVII., 1897, p. 63.

¶ Commercial value of fine silver.



## Congo Free State.\*

No mines have as yet been worked by Europeans ; but the natives of the Upper Congo dig a little iron ore and copper ore, and extract the metals for the purpose of making weapons, tools and utensils. Five kilograms of crude gold, valued at 15,000 francs, were obtained and exported from the Upper Congo in 1903.

## Corea.†

Corea appears to be rich in minerals, especially in the province of Ping-Yang, where coal and gold are being worked. Large deposits of smokeless coal exist in the country.

The value of the gold exported from Corea in 1903 amounted to £557,006, but this sum does not include the value of the gold carried away by persons in their luggage. The gold is mainly obtained from quartz mines worked by American and European companies. The Gwendoline mine in the Unsan district in the year 1900 employed 736 persons, and another gold mine at Tangokae, or Kimo Song, employed more than 500.

183 tons of copper ore, valued at £4,694, were exported in 1903.

## Costa Rica.‡

There are two groups of gold mines near the Pacific Coast which are being worked regularly, viz., the Bella Vista Group near Miramar, 15 miles from Puntarenas, and the Abangares group, 18 miles from Puerto Yglesias on the Gulf of Nicoya. The value of the gold from the mines exported during the year 1903 amounted to £46,914, or an increase of £17,432 on the figures for 1902.

## Cuba.§

Besides asphalt, copper, iron, and manganese, which have been more or less constantly mined in Cuba, there are many other minerals to be found distributed throughout the island, such as asbestos, clay, coal, gold, lead, limestone, mercury, naphtha, petroleum, silver, and zinc.

*Asphalt.*—A number of mines are worked for asphalt in the province of Habana, but large deposits exist in several other places.

*Clay.*—Clay fit for making bricks and tiles is abundant.

*Copper ore.*—The bulk of the copper ore which is raised at the present time comes from the celebrated workings of El Cobre in the province of Santiago de Cuba. The mineral also occurs in many places in the eastern part of the island.

*Gold.*—This metal is said to abound in the provinces of Santa Clara and Santiago.

*Iron ore.*—The latter province possesses extensive deposits of iron ore, and the mineral is obtained by quarrying ; there are no mines in the ordinary sense of the term. The Spanish-American Iron Co. and the Juragua Iron Co. are the principal producers.

*Limestone.*—This rock abounds everywhere. In 1901 the quantity of stone (principally limestone) obtained was 461,025 cubic metres, valued at £176,621. Much of the lime obtained in Cuba is used for bleaching the sugar.

\* Information furnished by the Département des Finances, Brussels ; and *Bulletin de l'État Indépendant du Congo*, No. 5, Brussels, May, 1904.

† *Eng. Min. Jour.*, Vol. LXVII., 1899, p. 676 ; Consul Lay, "Trade of Corea for the year 1902." *Dipl. and Cons. Reports* No. 2,995. Ann. Series, 1903 [Cd. 1386-72], p. 4 ; and "Trade of Corea for the year 1903." No. 3,220 [Cd. 1766-154], 1904.

‡ Consul Cox, "Report on the Trade of Costa Rica for the year 1903." *Dipl. and Cons. Reports*. No. 3,259, Ann. Series, 1904 [Cd. 2236-3].

§ Estadística General, Año de 1903, Habana, 1904, p. 164 ; "Commercial Cuba in 1903," published by the United States Bureau of Statistics, Washington, 1904, p. 1,207 ; and Carden "Trade of Cuba for the year 1903." *Dipl. and Cons. Reports*, No. 3,315, Ann. Ser. 1904 [Cd. 2236-59], p. 30.

CUBA—continued.

*Manganese ore.*—The deposits of manganese ore hitherto worked are situated at La Maya and El Christo in the vicinity of the city of Santiago. Much of the Cu contains from 47 to 50 per cent. of metal, and is exported to the United States.

TABLE 419.  
QUANTITIES and VALUES of MINERALS EXPORTED during the year 1903.

Description of Mineral.	1903.	
	Quantity.	Value.
	Metric Tons.	£
Asphalt ... ..	4,790	7,111
Copper Ore ... ..	800	2,127
Iron Ore ... ..	619,370	319,522
Manganese Ore ... ..	21,070	24,771
Total Value ... ..	—	353,531

Curaçao. (See DUTCH WEST INDIES.)

Denmark.\*

Chalk and calcareous marl are quarried near Aalborg. The annual output is 12,000 to 15,000 tons.

Bog iron ore exists in Jutland,† and in years gone by it was occasionally worked and smelted on a small scale.

FAROE ISLANDS.‡

For at least two centuries it has been known that the island of Suderö possesses deposits of coal, and it is rumoured that they will be worked.

GREENLAND.§

The quantity of cryolite obtained from Ivigtut in 1902 was 10,085 tons, and in 1903 was 9,110 tons.

During the summer months 76 persons were employed in 1902, and 92 in 1903. These numbers were reduced during each winter by about 35 and 32 men respectively.

Two fatal accidents, resulting in 2 deaths, occurred during the year 1902, but in 1903 no fatalities happened.

ICELAND.

*Coal.*—A bed of coal is said to have been discovered at Nordfjord, in Iceland.

*Iceland Spar.*||—About ten men are employed in the summer at a quarry on the coast of the island for the purpose of getting transparent calcite for optical instruments. The best quality is worth £12 per kilogramme. The total value of the yield is £280 yearly.

\* Consul Boyle, "Trade and Agriculture of Denmark for the year 1898." *Dipl. and Cons. Reports*. No. 2,141, April 1898 [C. 9044-127].  
† *Glückauf*, Vol. XXXIV., 1898, p. 872.  
‡ "Die Kohlen auf den Färöer." *B.u.h. Zeitung*, Vol. LX., 1901, p. 162.  
§ Official Report furnished by the Danish Government.  
|| *Mineral Mag.*, Vol. XIII. 1903, p. 396.



## Dutch East Indies.\*

Many of the Dutch Colonies in the East Indies contain valuable mineral deposits, which are being worked on a large scale.

## BANCA.

The alluvial diggings of the Island of Banca still yield large quantities of tin ore, and the output is increasing.

TABLE 420.

Year.	Persons Employed.	Quantity of Metallic Tin produced.	
		Pikols.	Metric Tons.
1901-1902 ... ..	13,257	171,133	10,561
1902-1903 * ... ..	14,270	171,213	10,566

The number of persons in the table includes not only the actual diggers of the ore, but also the charcoal burners and the smelters.

## BILLITON.

Like Banca, its neighbour Billiton is a large producer of tin ore.

TABLE 421.

Year.	Average Number of Persons Employed.	Quantity of Metallic Tin produced.	
		Pikols.	Metric Tons
1901-1902 ... ..	6,829†	74,812†	4,568†
1902-1903 ... ..	7,207	70,768	4,321

## BORNEO.‡

*Coal.*—The mines of Mahakkam River at Kutei in South-Eastern Borneo produced 2,693 metric tons of coal in 1902, and 5,115 tons in 1903. Other mines in South-Eastern Borneo produced 2,355 metric tons in 1902, and 760 tons in 1903.

*Diamonds.*—The estimated output of diamonds from Western Borneo was 855 carats in 1902, and 602 carats in 1903. Profitable diamond diggings were discovered by chance in the Martapura district of Southern and Eastern Borneo.

*Gold.*—There are three well marked auriferous districts in the island, viz., Sambas in Western Borneo, a second at the sources of the Kehajang and Kapuas rivers in Central Borneo, and a third in the south-eastern corner of the island.§

\* Official Return furnished by the Colonial Department of the Dutch Government.

† Corrected figures.

‡ See also British North Borneo, p. 322.

§ Truscott, "The Mining and Occurrence of Gold in the Dutch East Indies." *Trans. Inst. M. and M.*, Vol. X. 1901, with map.



DUTCH EAST INDIES—BORNEO—*continued.*

The output of gold from the Western Division of Borneo was 1,383 thail, 74 kilograms, in 1902, and 1,005 thail, or 54 kilograms, valued at fl. 73,365 £6,114, in 1903. The gold diggers are mostly Chinamen. 239 kilograms were produced by the Kahajan Concession in Central Borneo in 1902.

*Petroleum.\**—Borneo is now a producer of mineral oil. The oil-field is situated in the Sultanate of Kutei, a Dutch protectorate on the East Coast of Borneo. The crude oil is either refined on the spot or shipped direct from Balek Pappan. Steamers are using the crude oil as fuel, and also the liquid residue from the petroleum refineries. In 1902, 105,102 metric tons of crude oil were produced. The Poeloe Miang (Kutei) Concession was not working during that year.

## CELEBES.†

*Gold.*—The precious metal has long been worked by the natives in the northern part of the island, and within the last decade several European companies have been formed for the purpose of conducting operations on a larger scale.

## JAVA.‡

Among the mineral productions of Java may be named coal, gold, iodine, manganese ore, and petroleum.

*Coal.*—A little coal has been worked in the Sedan district.

*Gold.*—The natives, especially the women, obtain some gold by washing river sand in wooden bowls. Several gold mining companies have been started with European capital, and rich gold ore is being exported to Liverpool.

*Iodine.*—The Gunong Watoe Concession has springs containing iodides in solution from which 1,329 kil. of crude iodide of copper were manufactured in 1902, but in 1903 the Concession was not working.

*Manganese.*—Manganese ore is produced in the regencies of Pengasih and Nanggoela. The output was 4,800 tons in 1898 and 1,388 tons in 1899.

*Petroleum.*—Petroleum occurs in various parts of the island, and is obtained on a large scale by borings. The combined output of the wells was 63,182,955 litres of crude oil, and 20,290,000 litres refined oil in 1902, and 106,244,811 litres or 98,777 metric tons of crude oil in 1903.

## SINGKEP.§

The small tin-producing island of Singkep forms a sort of connecting link between Banca and the Malay Peninsula.

\* *Petroleum*, Vol. I., London, 1900, p. 179.—*Shipping and Mercantile Gazette and Lloyd's List*. London, 22nd June, 1901, and Official Return furnished by the Colonial Department of the Dutch Government.

† Truscott, "The Mining and Occurrence of Gold in the Dutch East Indies." *Trans. Inst. M. and M.*, Vol. X., 1901, with map.

‡ Consul Davids, "Trade of Java for the Year 1901." *Dipl. and Cons. Reports*, No. 2863, Ann. Series, 1902 [Cd. 786-16], p. 9; and Official Return furnished by the Colonial Department of the Dutch Government.

§ Official Return furnished by the Colonial Department of the Dutch Government and *Jaarboek van het Mijnwezen Nederlandsch Oost-Indië Dertigste Jaargang* 1901. Batavia, 1901.

Dutch West Indies.\*

ARUBA.

Gold mining is carried on by an English company. In 1902, 20 kilograms, valued at fl. 32,811, or £2,734, and in 1903, 21 kilograms, valued at fl. 22,850, or £1,904, were shipped.

Phosphate of lime was quarried with great profit between the years 1884 and 1892 ; in spite of lower prices the deposits are still being worked, and the quantity exported in 1902 was 10,530 tons (17,027 cubic metres), and in 1903, 15,511 tons (25,082 cubic metres); about one half of the quantity shipped comes to Great Britain.

BONAIRE, AND ST. MARTIN.

Salt is obtained by the natural evaporation of sea water at both these islands. In 1902 the export of salt from Bonaire was 82,883 hectolitres, valued at fl. 39,783, or £3,315, and in 1903, 100,976 hectolitres, valued at fl. 48,468, or £4,039. From St. Martin in 1902 the export was 48,595 hectolitres, valued at fl. 23,326 or £1,944, and in 1903, 60,895 hectolitres.

CURAÇOA.

The phosphate of lime mines in this island have been at a standstill since 1895. In 1901, 83,602 barrels of salt, valued at £8,642, were exported from Curaçoa.

SABA.

The sulphur deposits are no longer worked.

Ecuador.†

It is said that gold abounds, though the yearly output is small. It is obtained mainly from alluvial deposits, but the auriferous veins are being tested on a commercial scale.

There are also deposits of anthracite, copper ore, petroleum, salt, and silver ore.‡

It is not surprising that one article of commerce of a country possessing active volcanoes should be pumice stone. It is cut up for sale into lumps like bricks.

TABLE 423.

QUANTITY and VALUE of GOLD and SILVER produced during the years 1901 and 1902.§

Mineral.	1901.		1902.	
	Quantity.	Value.	Quantity.	Value.
Gold (fine) ... ..	Kilos. 165	£ 22,587	Kilos. 301	£ 41,067
Silver (fine)   ... ..	—	—	Kilos. 240	842

\* Official Return furnished by the Colonial Department of the Dutch Government and Consul Jesurun, "Trade of Curaçoa and its Dependencies for the year 1901." *Dipl. and Cons. Reports*, No. 2,902, Ann. Ser., 1901 [Cd. 786-206], 1902, p. 19 and p. 24.

† Consul Söderström, "Trade of Quito for the year 1897." *Dipl. and Cons. Reports*, No. 2,101, Ann. Ser., 1898 [C. 8648-123].

— Consul Chambers "Trade of Guayaquil for the year 1898. *Dipl. and Cons. Reports*, No. 2,246, Ann. Ser., 1899 [C. 9044-72].

‡ *Mining Journal*, Vol. LXX., 1900, p. 620.

§ *Report of the Director of the United States Mint for the year ended June 1903*, Washington, 1903, p. 145.

|| Commercial value of fine silver.



## FORMOSA—continued.

*Salt.*—The export is a Government monopoly. The quantity exported in 1901 was 37,433 tons valued at £12,568, and in 1903, 18,517 tons valued at £6,488; the rest of this quantity was sent to Japan. The output for the year 1901 was 48,560 tons.

*Sulphur.*—The quantity obtained in 1901 was 1,610 tons valued at £4,559, and in the half year ended June, 1902, 796 tons valued at £1,954.

## France.\*

*Antimony.*—Sulphide of antimony is worked in six departments on the mainland and also in Corsica.

*Arsenic.*—Most of the arsenic is produced at the two mines of Villanière and Saint-Étienne (Aude).

*Bauxite.*—Southern France possesses rich mines of bauxite; the most important workings are in the Department of the Var.

*Coal.*—The extraction of fossil fuel is the most important mining industry in France. For 91 per cent. of the persons employed in and about mines in 1903 were workmen in collieries. The output, including anthracite, amounted in 1903 to over 34 million metric tons, or nearly five million tons more than in the preceding year. The value of the production exceeded 90 per cent. of the value of the total output of all the mines.

The two great coal-producing departments are the Pas-de-Calais and the Nord. The former yielded over 16 million metric tons, and the latter over 6 million; the two departments together produced more than 22 million metric tons, or 63·3 per cent. of the total output of the country. Next in importance is the Loire Basin with over 3½ million metric tons. Borings for coal are being made at Saigneville, near Abbeville, in the Department of Somme.†

The total quantity of brown coal produced during the year 1903 amounted to 689,000 metric tons, or an increase of 57,000 tons compared with the preceding year.

The Department of the Somme is the principal seat of the peat industry, which produced 40,000 tons, or 40 per cent. of the total output in 1903.

The Central Committee of French Coal Mines, in its year book for 1904,‡ publishes much valuable information concerning the mines, together with a reprint of the laws affecting mines and mining.

*Copper ore.*—This mineral is worked in the Departments of Ariège, Savoie, Hautes-Alpes, Alpes-Maritimes, Gard, and Aude, and also in the Island of Corsica.

*Iron ore.*—There are three main iron ore districts (1) the North-east, or Meurthe-et-Moselle, which yields over 5 million metric tons out of a total of 6 million; (2) the Pyrenees, which give nearly ¼ million tons; and (3) Normandy, with an output of 170,538 metric tons. Iron mining in Normandy is an industry of comparatively recent date. Its geographical position enables it to supply ore for export, whilst the other iron districts furnish ore for home consumption.

*Iron pyrites.*—Nearly all the iron pyrites is the produce of the Sain-Bel mine (Rhône).

*Lead ore.*—The principal lead mine is at Pontpéan in Brittany.

*Manganese ore.*—Las Cabesses mine (Ariège), which produced carbonate of manganese, was not worked in 1903. Pyrolusite is obtained at the Romanèche and Grand-Filon mines (Saône-et-Loire). The output at these latter mines was 1 million metric tons.

\* *Statistique de l'Industrie Minérale et des Appareils à Vapeur en France et en Algérie pour l'année 1902*, Paris, 1903. Information furnished by the French Government.

† Consul Payton, "Trade of Consular District of Calais for the year 1903." *Dipl. and Cons. Reports*, No. 3146, A. 1904. [Cd. 1766-80], 1904, p. 13.

‡ *Comité Central des Houillères de France. Annuaire, 1904.* Paris, 1904.

FRANCE—continued.

TABLE 425.

PERSONS EMPLOYED at QUARRIES during the Years 1902 and 1903.\*

Kind of Quarries.	1902.			1903.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	†
Underground ... ..	13,621	9,336	22,957	14,341	9,449	23
Open ... ..	—	111,666	111,666	—	114,363	114
Total ... ..	13,621	121,002	134,623	14,341	123,812	137

TABLE 426.

QUANTITY and VALUE of the MINERALS raised from MINES and WORKINGS other than QUARRIES during the Years 1902 and 1903.\*

Mineral.	1902.		1903.		
	Quantity.	Value.	Quantity.	Value.	
	Metric Tons.	Francs.	Metric Tons.	Francs.	
Anthracite ... ..	1,437,000	—†	1,650,000	—	
Antimony ore ... ..	9,715	745,822	12,380	76	
Arsenic ... ..	5,372	116,276	6,658	14	
Bituminous shale, limestone, &c. ...	258,295	2,022,043	243,295	1,811	
Brown coal ... ..	632,423	6,320,356	688,757	6,60	
Coal ... ..	27,928,047	430,173,794‡	32,567,661	482,55	
Copper ore ... ..	828	136,268	10,892	72	
Gold quartz ... ..	—	—	500	2	
Graphite ... ..	150	5,700	126		
Iron ore... ..	5,003,782	18,345,690	6,219,541	22,88	
Iron pyrites ... ..	318,235	4,724,159	322,118	4,76	
Lead ore, argentiferous ... ..	22,634	2,503,997	23,080	2,43	
Manganese ore ... ..	12,536	327,674	11,583	29	
Peat ... ..	109,941	1,674,233	100,348	1,28	
Salt {	Rock salt and salt from brine	292,523	6,610,917	298,201	7,55
	Salt contained in brine used for making soda ... ..	296,461	1,852,881	311,931	2,02
	Salt from sea water ... ..	274,143	4,001,256	357,399	5,67
Sulphur-bearing limestone ... ..	8,021	98,192	7,375	7	
Tin ore ... ..	33	53,850	21	3	
Zinc ore ... ..	57,982	4,042,210	66,922	5,62	
Total value in Francs ... ..	—	483,755,318	—	545,29	
„ £ sterling ... ..	—	£19,350,213	—	£21,81	

\* Statistique de l'Industrie Minière en France et en Algérie pour l'année 1902, and pour l'année 1903.  
† Value included with coal.                      ‡ Including value of anthracite.

## FRANCE—continued.

TABLE 427.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1902 and 1903.\*

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Aluminous earth ... ..	1,275	20,375	2,224	47,000
Amethyst ... ..	45	31,500	45	31,500
Barytes ... ..	4,323	59,839	5,731	90,457
Bauxite ... ..	96,900	873,425	133,890	1,175,120
Cement ... ..	962,930	27,224,318	898,363	22,352,059
Chalk ... ..	38,765	581,102	44,922	664,942
Clay {	China clay ... ..	70,851	1,741,022	75,378
	Fireclay ... ..	295,341	1,757,454	253,460
	Potter's clay ... ..	4,541,359	6,083,495	4,734,924
	White clay for Stucco ...	352	18,656	350
Flagstone ... ..	56,719	1,313,596	62,855	1,434,082
Fluor spar ... ..	2,650	39,420	2,447	33,454
Fuller's earth ... ..	3,400	15,300	3,800	17,100
Gypsum {	Plaster ... ..	1,572,687	16,005,625	1,468,830
	Manure ... ..	219,487	1,186,446	162,766
Lignite (Pyritiferous) ...	6,200	27,900	6,213	27,954
Lime ... ..	4,796,807	43,439,725	4,727,543	43,835,440
Lithographic stone ... ..	441	20,810	523	37,050
Magnesium silicate ... ..	70	2,800	—	—
Marble ... ..	118,894	4,829,068	136,615	1,989,331
Marl ... ..	1,119,362	1,572,887	1,299,999	1,820,956
Millstones ... ..	34,504	1,507,781	35,031	1,561,044
Ochre ... ..	34,770	1,908,435	34,042	3,382,411
Onyx ... ..	2,283	153,288	2,626	114,446
Paving stone ... ..	554,854	9,336,791	577,554	10,294,439
Phosphate of lime ... ..	543,900	12,402,269	475,783	10,961,903
Sand, gravel, and flint ...	6,136,900	10,740,504	5,328,905	9,424,120
Slate {	Roofing ... ..	320,098	19,813,870	382,461
	Slabs ... ..	1,410	204,500	1,404
Steatite, talc, and asbestos ...	10,365	343,100	18,568	570,284

\* Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1902, and pour l'année 1903.



FRANCE—continued.

TABLE 427—continued.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1902 and 1903\*—contin

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Stone for building ... ..	10,725,607	48,215,450	10,713,356	46,765,8.
„ (broken for ballast) ... ..	13,171,423	27,798,147	12,815,254	27,147,2.
„ for mosaic work ... ..	2,100	53,000	2,000	50,0
Whetstones ... ..	641	51,766	872	73,0
Total value in Francs ...	—	239,373,664	—	233,832,3
„ £ sterling ...	—	£9,574,947	—	£9,353,2

TABLE 428.

DEATHS from ACCIDENTS at MINES during the Years 1902 and 1903.\*

Kind of Mines	1902.						1903.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Acci per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	T
Anthracite, brown coal, and coke.	151	29	180	1·27	·63	1·09	144	26	170	1·19	·56	1
Other Mines ...	16	1	17	1·46	·20	1·07	41	4	45	3·59	·80	2
Totals ...	167	30	197	1·29	·59	1·09	185	30	215	1·40	·59	1

TABLE 429.

DEATHS from ACCIDENTS at QUARRIES during the Years 1902 and 1903.\*

Kind of Quarries.	1902.						1903.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Acci per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	T
Underground ...	47	3	50	3·45	·32	2·18	34	2	36	2·37	·21	1
Open ... ..	—	106	106	—	·95	·95	—	108	108	—	·94	
Total ...	47	109	156	3·45	·90	1·16	34	110	144	2·37	·89	1

\* *Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1902, and pour l'année 1903.*

The following figures show that the death-rate from accidents at coal mines per 1,000 persons employed below ground in the year 1903 in France was lower than it has been for several years past:—

1896	...	...	...	...	1.62 per 1,000
1897	...	...	...	...	1.34 "
1898	...	...	...	...	1.26 "
1899	...	...	...	...	1.62 "
1900	...	...	...	...	1.62 "
1901	...	...	...	...	1.40 "
1902	...	...	...	...	1.27 "
1903	...	...	...	...	1.19 "

### French Guiana.\*

Gold mining is the only mineral industry of any importance in the French Colony. The districts where alluvial mining is principally carried on are Maroni and Mana. There is only one quartz mine successfully working at the present time, viz., that belonging to the Société Anonyme of St. Elie, situated in the Sinnamary district.

An attempt has been made at gold dredging, but the results so far have not been very satisfactory.

In 1902, 4,230 tons of phosphate of lime, valued at 169,000 francs (£6,760),<sup>plus</sup> were exported.

Prospecting for diamonds is being undertaken by a local syndicate.

The output of gold in 1903 was 4,325 kilos.

TABLE 430.

QUANTITY of GOLD produced in 1902 and 1903.

1902.		1903.	
Gold.		Gold.	
Quantity.	Value.	Quantity.	Value.
Kilos. 4,645	{ Francs 12,544,000 £ sterling 501,760	Kilos. 4,325	{ Francs 11,709,400 £ sterling 468,376

**French Possessions** (See ALGERIA, FRENCH GUIANA, INDO-CHINA, IVORY COAST, MADAGASCAR, NEW CALEDONIA, SENEGAL, and TUNIS).

### German East Africa.†

**Coal.**—There is a large coal bed in Songwe at the north end of Lake Nyassa; it is not worked, as wood is at present a cheaper fuel for the steamers.

**Gems.**—Garnets are plentiful and £2,750 worth were exported in 1900–01.

\* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année, 1902, and pour l'année, 1903*; Acting Vice-Consul Fourrage, "Trade of French Guiana for 1902." *Dipl. and Cons. Reports*, No. 3,106, Ann. Ser. [Cd. 1766–40], London, 1903, pp. 4–6; and *Annuaire Statistique*, Vol. 23, 1903, Paris, 1904, p. 431.

† Vice-Consul Dundas, "Report on German East Africa for the year 1901." *Dipl. and Cons. Reports*, No. 2,819, Ann. Ser. [Cd. 786–123], London, 1902; Buchanan, "German Colonies for the year 1901–2." *Dipl. and Cons. Reports*, No. 2,983, Ann. Ser. [Cd. 1386–60], 1903; and Whitehead, "German Colonies for the year 1902–3." *Dipl. and Cons. Reports*, No. 3,296, Ann. Ser. [Cd. 2236–40], 1904.



GERMAN EAST AFRICA—continued.

*Gold.*—Prospecting is going on in the Irambi and Muanza districts ; in the latter gold-bearing quartz veins have been discovered.

*Salt.*—Brine springs at Mlagarassi, Lake Nyassa, produce good salt.

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German Empire.

The following tables relating to the mining industry of the German empire show that in 1903 its mines employed 622,606 persons, and produced more than 162 million metric tons of coal and brown coal, and over 15 million tons of iron ore, besides other minerals. The progress of mining during the last 32 years has been enormous. In 1871 the total value of minerals raised was rather more than £15,000,000 sterling ; in 1903 it reached nearly £65,000,000 sterling. This rise is largely due to the increased output of coal.

*Amber.\**—The shores of the Baltic have been the principal amber-yielding region of the world for many centuries.

*Brown Coal.*—Deposits of brown coal are found in more or less abundance over nearly the whole of North Germany ; the principal workings are in the provinces of Brandenburg and Saxony. The manufacture of briquettes and other patent fuel, which amounted to 10,476,000 tons in 1903, is of great value to the brown coal industry.

*Coal.*—There are three principal coal-mining districts in Prussia : (1) The Lower Rhine and Westphalian Basin, which is by far the most important ; (2) Silesia, and especially Upper Silesia ; (3) the Rhenish district in the neighbourhood of Saarbrücken and Aix-la-Chapelle. Most of the coal is derived from seams of true Carboniferous age, near Hanover there are extensive workings in the Wealden beds.

The figures in Table 433 show that the output of coal in 1903 reached 116,637,765 metric tons, or an increase of over 9 million tons compared with that of 1902.

The exports of coal from Germany amounted to 17,389,934 metric tons, and of coke to 2,525,000 tons in 1903.†

*Copper.*—The bulk of the copper is obtained by the large and important Mansfeld Company from a thin bed of cupriferous shale, which at the same time is silver-bearing.

*Iron Ore.*—Veins in the Siegen district and in the Duchy of Nassau yield spathose ore, brown iron ore, and hæmatite rich in manganese. These sources of supply are, however, of far less importance than the stratified ore of Jurassic age in Luxemburg and Lorraine. Indeed, the iron-field upon the confines of France and Germany is at the present moment the greatest ore-producer of Europe. It is estimated that Luxemburg possesses 14 sq. m. (37 sq. km.), Germany 160 sq. m. (414 sq. km.), and France 208 sq. m. (540 sq. km.) of iron territory, in which ore can be raised at a profit. The so-called "iron-ore formation" consists of five main beds of oolitic iron ore interstratified with marl and limestone, with an average thickness of 105 ft. (32 m.) of which rather more than one-half is available iron ore. The ore contains on an average 36 per cent. of iron and 1·7 per cent of phosphoric acid.‡

In 1903 the output increased by 2,387,116 metric tons, or more than 18 per cent. on that of the previous year.

*Lead Ore.*—The lead ore comes chiefly from Upper Silesia, the Hartz, and Rhenish Prussia.

*Salts.*—In no country in the world is there such an abundance of potassium salts as in Germany. They are mined in the province of Prussian Saxony and the Duchy of Anhalt ; of late years Hanover has had a share in the production of these important and not very widely spread minerals. Common salt and potassium chloride are likewise obtained in considerable quantities by evaporation of solutions pumped up from boreholes.

*Zinc Ore.*—Upper Silesia is the mainstay of the German zinc industry.

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\* Dahms "Vorkommen und Verwendung des Bernsteins." *Zeitschr. f. p. Geologie*, Vol. IX., 1901, p. 201.

† Consul-General Schwabach, "Trade of Germany for the year 1903." *Dipl. and Cons. Reports*, No. 3,153, Ann. Ser. [Cd. 1766-87], 1904, p. 28, and *Vierteljahrshefte zur Statistik des Deutschen Reichs*. Jahrgang, 1904, Berlin IV. Heft, p. 96.

‡ Hoffmann, "Das Vorkommen der oolithischen Eisenerze (Minette) in Luxemburg und Lothringen." *Glückauf*, Vol. XXXV., 1899, p. 640.



GERMAN EMPIRE—continued.

TABLE 432.

PERSONS EMPLOYED at WELLS producing BRINE or other MINERAL SOLUTIONS during the Years 1902 and 1903.\*

Mineral Solution.	1902.			1903.		
	Men.	Women.	Total.	Men.	Women.	Total.
Sodium chloride ... ..	3,545	22	3,567	3,483	21	3,504
Potassium chloride ... ..	4,559	28	4,587	4,355	29	4,384
Sulphates or chlorides of sodium, potassium, magnesium, or aluminium.	810	9	819	729	13	742
Total ... ..	8,914	59	8,973	8,567	63	8,630

For persons employed at quarries, see page 411.

TABLE 433.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1902 and 1903.\*

Mineral.	1902.		1903.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
I.—COALS, ASPHALT, &c.				
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Asphalt ... ..	88,374	604	87,454	812
Brown coal ... ..	43,126,281	102,571	45,819,488	107,412
Coal ... ..	107,473,933	950,517	116,637,765	1,005,153
Graphite ... ..	5,023	174	3,720	149
Petroleum ... ..	49,725	3,351	62,680	4,334
Total value ... ..	—	1,057,217	—	1,117,860
II.—SALTS.				
Boracite ... ..	196	24	159	20
Kainite ... ..	1,322,633	19,210	1,557,243	21,883
Magnesium salts ... ..	1,169	9	559	4
Potassium salts, other than kainite ...	1,962,384	20,796	2,073,720	20,981
Rock salt ... ..	1,010,412	4,699	1,095,541	5,056
Total value ... ..	—	44,738	—	47,944
III.—ORES.				
Arsenic ore ... ..	3,959	307	4,369	331
Cobalt, nickel, and bismuth ores ...	12,433	754	14,607	819
Copper ore ... ..	761,921	20,431	772,695	20,449
Iron ore ... ..	12,833,522	54,109	15,220,638	62,011
Iron pyrites ... ..	165,225	1,285	170,867	1,319
Lead ore ... ..	167,855	13,436	165,991	14,084

\* Vierteljahrshefte zur Statistik des Deutschen Reichs; Jahrgang, 1904, Berlin, IV. Heft.

## GERMAN EMPIRE—continued.

TABLE 433—continued.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1902 and 1903—continued.

Mineral.	1902.		1903.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
III.—ORES—cont.	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Manganese ore ... ..	49,812	579	47,994	520
Silver and gold ores ... ..	11,724	1,389	11,467	1,245
Iron ore ... ..	104	61	110	57
Uranium and tungsten ores ... ..	31	14	35	21
Bitriol and alum ores, other than iron pyrites.	785	6	1,110	8
Iron ore ... ..	702,504	29,811	682,853	33,058
Total value ... ..	—	122,182	—	133,922
Total value for the German Empire in marks.	—	1,224,137	—	1,299,726
Total value for the German Empire in £ sterling.	—	£61,206,850	—	£64,986,300
Grand Duchy of Luxemburg—iron ore	5,130,069	11,622	6,010,012	12,224

TABLE 434.

QUANTITY and VALUE of MINERALS produced from BRINE, &amp;c. WELLS during the Years 1902 and 1903.\*

Mineral Solution.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
Alkaline sulphates :—	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks
(a.) Potassium sulphate... ..	28,279	4,534	36,674	5,838
(b.) Potassium and magnesium sulphate.	18,147	1,405	23,631	1,854
(c.) Sodium sulphate ... ..	90,742	2,344	83,087	2,118
Earthy sulphates :—				
(a.) Aluminium sulphate ... ..	47,905	3,081	49,727	3,271
(b.) Alum... ..	4,108	432	3,934	415
Magnesium chloride ... ..	19,658	310	22,990	434
Magnesium sulphate ... ..	39,262	541	37,844	629
Potassium chloride ... ..	267,512	31,545	280,248	34,140
Salt (sodium chloride) ... ..	572,846	15,613	598,394	14,184
Total value in marks ... ..	—	59,805	—	62,883
„ „ £ sterling ... ..	—	£2,990,250	—	£3,144,150

\* Vierteljahrshefte zur Statistik des Deutschen Reichs ; Jahrgang, 1904, Berlin, IV. Heft.

The following tables give the output and value of some of the more important minerals, classified according to the States in which they were produced.

TABLE 435.

*Brown Coal.*

State.	1902.*		1903.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Anhalt ... ..	1,278,112	4,058	1,376,695	4,311
Bavaria ... ..	27,337	104	25,189	94
Brunswick ... ..	1,307,867	4,040	1,428,067	4,363
Hesse ... ..	296,685	763	351,057	995
Prussia ... ..	36,228,285	83,475	38,462,766	87,321
Saxe Altenburg ... ..	2,181,661	5,433	2,274,646	5,553
Saxony ... ..	1,746,638	4,524	1,839,422	4,597
Other German States ... ..	59,696	174	61,646	178
Total value in marks ... ..	} 43,126,281 {	102,571	} 45,819,488 {	107,412
" " £ sterling ... ..		£5,128,550		£5,370,600

TABLE 436.

*Coal.*

State.	1902.*		1903.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Alsace-Lorraine ... ..	1,309,818	14,140	1,583,365	16,376
Bavaria ... ..	1,233,568	13,408	1,356,556	14,596
Prussia ... ..	100,115,315	867,735	108,809,384	920,611
Saxony ... ..	4,649,100	53,530	4,693,133	51,358
Other German States ... ..	166,132	1,704	195,327	2,212
Total value in marks ... ..	} 107,473,933 {	950,517	} 116,637,765 {	1,005,153
" " £ sterling ... ..		£47,525,850		£50,257,650

TABLE 437.

*Rock Salt.*

State.	1902.*		1903.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Anhalt ... ..	288,613	1,192	309,783	1,251
Prussia ... ..	359,006	1,734	409,199	1,959
Württemberg ... ..	284,814	1,413	307,105	1,528
Other German States ... ..	77,979	360	69,454	318
Total value in marks... ..	} 1,010,412 {	4,699	} 1,095,541 {	5,056
" " £ sterling ... ..		£234,950		£252,800

\* Vierteljahrshefte zur Statistik des Deutschen Reichs ; Jahrgang, 1903, Berlin, IV. Heft.

† " " " " " " " 1904



## GERMAN EMPIRE—continued.

TABLE 438.

## Iron Ore.

State.	1902.*		1903.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Alsace-Lorraine ... ..	8,793,496	22,725	10,683,042	28,130
Bavaria ... ..	157,375	747	162,500	757
Brunswick ... ..	215,857	373	213,781	363
Hesse ... ..	174,439	1,438	207,695	1,641
Prussia ... ..	3,362,887	28,216	3,786,743	30,412
Saxe-Meiningen ... ..	74,625	316	113,148	438
Waldeck... ..	30,567	153	32,665	164
Other German States ... ..	24,276	141	21,064	106
Total value in marks... ..	12,833,522 {	54,109	15,220,638 {	62,011
" " £ sterling ... ..		£2,705,450		£3,100,550
Grand Duchy of Luxemburg ... ..	5,130,069 {	11,622	6,010,012 {	12,224
		£581,100		£611,200

TABLE 439.

## Silver and Gold Ores.

State.	1902.*		1903.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Total quantity and value in marks for German Empire ... ..	11,724 {	1,389	11,467† {	1,245
" " " £ sterling ... ..		£69,450		£62,250

According to a return§ of the mining branch of the great industrial insurance institution of the German Empire, which numbers more than half a million members, the deaths from accidents among persons employed in and about mines and smelting works have been as follows :—

TABLE 440.

## DEATHS FROM ACCIDENTS AT MINES AND OTHER MINERAL WORKINGS IN GERMANY.

Year.	Deaths which occurred in the same year as the accident.		Total Deaths, including those which took place after the close of the year in which the accident happened.	
	Number of Deaths.	Number of Deaths per 1,000 Persons Insured.	Number of Deaths.	Number of Deaths per 1,000 Persons Insured.
1892	830	1·96	884	2·08
1893	920	2·19	974	2·31
1894	786	1·84	830	1·96
1895	912	2·12	963	2·24
1896	971	2·18	1,021	2·29
1897	961	2·05	1,005	2·14
1898	1,254	2·53	1,299	2·62
1899	1,060	2·03	1,105	2·12
1900	1,145	2·02	1,185	2·10
1901	1,289	2·12	1,322	2·18
1902	1,080	1·80	1,104	1·84
1903	1,159	1·87	—	—

\* Vierteljahrshefte zur Statistik des Deutschen Reichs; Jahrgang, 1903, Berlin, IV. Heft.

† 106 kilos. of fine gold and 180,374 kilos. of fine silver were extracted from these ores at the Metallurgical Works in 1903.

§ Neunzehnter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1903, Berlin, p. 37.

GERMAN EMPIRE—continued.

TABLE 441.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1903.\*

Kind of Workings.	Average Number of Persons Insured.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Insured.
		Males.	Females.	Total.	
Brown coal mines ... ..	56,365	110	2	112	1·99
Coal mines ... ..	458,026	934	—	934	2·04
Ore mines and smelting works... ..	76,102	76	—	76	1·00
Salt mines and brine works ... ..	22,301	29	—	29	1·30
Other mineral workings... ..	7,004	8	—	8	1·14
Total ... ..	619,798	1,157	2	1,159	1·87

TABLE 442.

ACCIDENTS CLASSIFIED so as to show whether they were due to the WORKMEN'S NEGLIGENCE, Year 1903.†

Section.	Accidents.								Total Numbers of Accident
	Owing to Danger Inherent to the Work itself.		By Defects in the Working.		Through Fault of Fellow Workman.		Through Fault of Injured Person.		
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
1. Bonn ... ..	1,083	70·55	2	0·13	30	1·96	420	27·36	1,533
2. Bochum ... ..	3,561	82·91	12	0·28	97	2·26	625	14·55	4,295
3. Clausthal ... ..	166	65·10	—	—	4	1·57	85	33·33	255
4. Halle ... ..	412	50·24	34	4·15	64	7·81	310	37·80	820
5. Waldenburg ... ..	161	80·50	—	—	10	5·00	29	14·50	200
6. Tarnowitz ... ..	554	31·60	8	0·50	80	4·60	1,109	63·30	1,751
7. Zwickau ... ..	225	68·81	5	1·53	12	3·67	85	25·99	327
8. Munich ... ..	89	90·81	1	1·02	2	2·04	6	6·13	98
Total ... ..	6,251	67·35	62	0·67	299	3·22	2,669	28·76	9,281

The main result of this table is that nearly 29 per cent. of the accidents were due to the carelessness of the persons injured. Last year the percentage was 32.

\* *Neunzehnter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1903*, Berlin, 1904, pp. 52-54.  
† *Ibid.*, p. 39.







GERMAN EMPIRE—continued.

Separate statistics have been obtained for the following States, forming parts of the German Empire, viz., Bavaria, Prussia, and Saxony.

BAVARIA.\*

TABLE 444.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1902 and 1903.

Kind of Mines or Mineral Workings.	1902.		1903.		Kind of Mines or Mineral Workings.	1902.		1903.	
	Men.	Women and Children.	Men.	Women and Children.		Men.	Women and Children.	Men.	Women and Children.
Barytes ... ..	141	317	118	358	Melaphyre... ..	1,681	2,648	1,878	4,686
Basalt ... ..	1,053	2,956	1,003	2,591	Ochre, &c. ... ..	113	240	146	214
Brown coal ... ..	135	316	130	347	Paving stones ... ..	75	192	336	390
Cement marl ... ..	265	627	258	457	Porcelain earth ... ..	107	78	145	160
Coal ... ..	7,365	15,504	7,820	15,772	Salt, rock ... ..	105	182	92	156
Copper ore ... ..	4	4	4	—	„ from brine ... ..	241	702	218	709
Emery ... ..	9	26	6	22	Sand ... ..	115	294	132	380
Feldspar ... ..	24	66	36	110	Sandstone ... ..	3,809	7,842	3,711	7,886
Fireclay ... ..	653	1,364	608	1,561	Slates (roofing and slabs). ... ..	72	165	136	339
Fluorspar ... ..	88	82	32	105	Steatite ... ..	77	205	70	225
Granite ... ..	3,742	7,055	3,620	7,289	Whetstone ... ..	23	10	8	2
Graphite ... ..	164	36	128	25	Zinc and Lead ... ..	—	—	2	—
Gypsum ... ..	63	105	90	194					
Iron ore ... ..	737	2,086	785	2,130					
Iron pyrites ... ..	38	105	40	107					
Limestone ... ..	1,610	2,701	1,491	2,071					
Lithographic stone	784	1,034	451	278	Total ... ..	23,243	46,942	23,494	48,563

TABLE 445.

QUANTITY and VALUE of MINERALS obtained during the Years 1902 and 1903.

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes ... ..	8,034	59,800	8,642	56,730
Basalt ... ..	689,334	1,420,689	634,115	1,232,624
Brown coal ... ..	26,429	100,295	23,599	87,397
Cement marl ... ..	178,301	444,168	200,407	347,482
Coal ... ..	1,102,230	12,552,415	1,210,440	13,664,199
Emery ... ..	225	10,000	220	9,800
Feldspar ... ..	447	3,813	1,060	13,040
Fireclay... ..	198,882	1,215,981	173,919	1,387,765
Fluorspar ... ..	5,460	39,495	3,410	40,270
Granite ... ..	252,901	2,510,176	255,494	2,128,478
Graphite ... ..	5,023	173,980	3,719	148,784

\* Return furnished by the Royal Bavarian Mining Department, Munich.

GERMAN EMPIRE.—BAVARIA—continued.

TABLE 445—continued.

QUANTITY and VALUE of MINERALS obtained during the Years 1902 and 1903—cont.

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Gypsum...	31,701	53,496	30,894	80,443
Iron ore...	157,375	746,986	162,500	756,854
„ pyrites	2,635	34,373	2,324	28,789
Limestone	597,055	1,419,663	730,279	1,244,648
Lithographic stone	9,020	789,150	9,890	848,600
Melaphyre	418,206	1,610,001	604,068	1,254,455
Ochre, &c.	13,947	139,311	19,486	223,913
Paving stones	7,739	143,260	8,790	152,452
Porcelain earth	92,073	215,252	88,140	169,790
Salt, rock	832	15,666	879	16,560
„ from brine	41,229	1,837,044	41,782	1,871,441
Sand	109,432	185,143	155,921	222,406
Sandstone	524,427	3,158,576	542,110	2,917,619
Slates (roofing and slabs)	1,210	58,320	2,074	89,642
Steatite	2,029	202,950	1,866	165,150
Whetstone	24	6,080	83	4,170
Total value in Marks	{ — }	29,146,083	{ — }	29,163,501
„ „ £ sterling		£1,457,304		£1,458,175

PRUSSIA.

TABLE 446.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1902 and 1903.\*

Kind of Mines or other Mineral Workings.	1903.				Total for preceding year
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal	15,162	10,715	17,334	43,211	44,342
Coal	326,415	—	103,422	429,837	411,323
Ore...	42,435	1,333	21,998	65,766	66,853
Other mineral workings	8,919	1,537	8,882	19,338	18,445
Total	392,931	13,585	151,636	558,152	540,963

\* Zeitschr. B. H. S. W., Vol. LIII., p. 48.

## GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 447.

QUANTITY and VALUE of MINERALS obtained from MINES during the Years  
1902 and 1903.

Mineral.	1902.*			1903.†		
	Number of Mines.	Output.		Number of Mines.	Output.	
		Quantity.	Value.		Quantity.	Value.
I.— <i>Coals and Asphalt.</i>						
Asphalt ... ..	3	Metric Tons. 28,035	Marks. 269,383	3	Metric Tons. 23,518	Marks. 224,951
Brown coal ... ..	379	36,228,285	83,474,930	373	38,462,766	87,320,904
Coal ... ..	272	100,115,315	867,734,713	276	108,809,384	920,610,551
Petroleum ... ..	10	29,520	2,341,072	18	41,733	3,182,060
Total ... ..	664	136,401,155	953,820,098	670	147,337,401	1,011,338,466
II.— <i>Salts.</i>						
Boracite (pure) ... ..	—	172	21,094	—	135	16,802
Kainite ... ..	7	943,450	14,080,030	10	1,118,270	15,687,049
Magnesium salts ... ..	—	762	5,589	—	421	2,631
Potassium salts, other than kainite.	15	1,344,542	13,344,334	15	1,344,038	12,935,747
Rock salt ... ..	12	359,006	1,733,964	12	409,199	1,958,808
Total ... ..	34	2,647,932	29,185,011	37	2,872,063	30,601,037
III.— <i>Ores.</i>						
Arsenic ore ... ..	1	2,909	252,404	1	3,538	288,009
Cobalt ore ... ..	1	76	14,713	—	65	21,092
Copper ore ... ..	33	751,496	20,232,719	33	761,188	20,196,630
Gold and silver ore ... ..	1	18	183,441	—	13	80,624
Iron ore ... ..	332	3,362,887	28,216,052	346	3,786,743	30,411,812
Iron pyrites ... ..	6	155,410	1,185,352	5	159,234	1,209,827
Lead ore ... ..	109	152,282	13,217,996	93	150,711	13,679,715
Manganese ore ... ..	15	48,882	529,597	12	47,110	462,913
Nickel ore ... ..	2	11,816	212,588	2	14,058	176,725
Vitriol ores and alum ores, other than iron pyrites.	—	220	1,319	1	580	2,478
Zinc ore ... ..	50	699,392	29,602,555	47	679,320	32,765,583
Total ... ..	550	5,185,388	93,648,736	540	5,602,560	99,296,408
Gross Total ... ..	1,248	144,234,475	1,076,653,845	1,247	155,812,024	1,141,235,911
Total value in £ sterling	—	—	£53,832,692	—	—	£57,061,796

\* Zeitschr. B. H. S. W., Vol. LI., p. 20.

† " " Vol. LII, p. 20.



GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 450.

DEATH-RATES from ACCIDENTS at MINES and other MINERAL WORKINGS during Year 1903 and preceding Year.\*

Kind of Mines or other Mineral Workings.	1903.				To pre s.
	Death-rate per 1,000 Persons Employed.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal ... ..	2·90	1·21	1·50	1·92	
Coal ... ..	2·21	—	1·01	1·92	
Ore ... ..	1·41	·75	·32	1·03	
Other mineral workings ... ..	2·47	3·25	·23	1·50	
Total ... ..	2·16	1·40	·92	1·80	

TABLE 451.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS, classified according to kind of MINERAL WORKED, and cause of ACCIDENT, during the Year 1902, and DEATH-RATES for 1902 and 1903.†

Cause of Accident.	Deaths from Accidents					Death-rate per Persons Emplo	
	Brown Coal Mines.	Coal Mines.	Ore Mines.	Other Mineral Workings.	Total.	1903.	1902.
Blasting ...	—	43	5	2	50	·13	
Falls of ground ...	23	333	29	11	396	1·01	
On inclines and in intermediate shafts. }	—	112	4	2	118	·30	
In shafts ...	9	83	15	5	112	·28	
In levels ...	2	46	3	—	51	·13	
Explosion of fire- damp, coal dust, or gases generated by fires. }	—	37	—	—	37	·09	
Suffocation by nat- ural gases (with out explosion), or gases generated by fires (without ex- plosion), or blast- ing. }	6	10	—	1	17	·04	
Machinery... ..	—	2	—	—	2	·01	
Irruptions of water	2	2	—	—	4	·01	
In open workings	13	—	1	5	19	1·40	1
On surface... ..	26	104	7	2	139	·92	1
Sundries ... ..	2	54	4	1	61	·15	
Total ... ..	83	826	68	29	1,006	1·80	1

\* Zeitschr. B. H. S. W., Vol. LII., p. 51.  
† " " " pp. 48-51.

GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 453— continued.

Cause.		1902.			1903.	
		Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.	Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.
III. Underground fires.	10. Ventilating furnaces	—	—	—	—	—
	11. Accidental or spontaneous ignition of mineral, timber, or other material.	—	—	—	1	—
IV. Miscellaneous	12. Sparks from tools ...	—	—	—	—	—
	13. Sundries or unknown	—	—	—	1	—
Total ... ..		3*	19	22	9†	21

SAXONY.‡

TABLE 454.

PERSONS EMPLOYED at MINES during the Years 1902 and 1903.

Kind of Mines.				1902.			1903.		
				Males.	Females.	Total.	Males.	Females.	Total.
Brown coal	...	...	...	3,355	133	3,488	3,310	143	3,453
Coal	...	...	...	25,672	349	26,021	25,352	326	25,678
Ore	...	...	...	3,585	—	3,585	3,303	—	3,303
Total	...	...	...	32,612	482	33,094	31,965	469	32,434

According to the Saxon Year-book, 79,900 persons were dependent upon the 8 workers in and about mines in 1903.

TABLE 455.

QUANTITY and VALUE of MINERALS obtained during the Years 1902 and 1903

Mineral.					1902.		1903.	
					Quantity.	Value.	Quantity.	Value.
					Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes	...	...	...	...	72	2,409	158	1
Bismuth, cobalt, and nickel ores	...	...	...	...	534	525,925	467	619
Brown coal	...	...	...	...	1,746,638	4,523,657	1,839,422	4,597
Coal	...	...	...	...	4,407,255	53,530,322	4,450,111	51,374

\* Causing 9 deaths, *Op. cit.*, Vol. LI., p. 59.  
† 14 " " " Vol. LII., pp. 59 and 60.  
‡ *Jahrbuch für das Berg-und Hüttenwesen im Königreiche Sachsen, Jahrgang 1903*, Freiberg, pp. B65, 67, and 184.

GERMAN EMPIRE.—*continued.*

German South-West Africa.\*

The existence of large deposits of copper ore in the Otavi district has been confirmed by prospecting, but until the country is in a more settled state, and the railway projected by the Otavi Mining Company is constructed, little can be expected in the development of the mining industry.

Greece.

Greece is well supplied with numerous metallic ores, marble and other valuable minerals. The mining industry is improving, as the state revenue from this source, which in 1890 was only £67,234, amounted in 1902 to £108,155.† The mineral resources of the country are described at some length in a recent Consular report,‡ based upon descriptions given by Cordella.

*Chrome Ore.*—This mineral is principally worked in Thessaly; 7,900 tons valued at £11,300 were exported from the district of Magnesia in 1903.§

*Emery.*—Naxos has long been famous for its emery; the trade in emery is a Government monopoly. The quantity exported from Syra in 1903 was 5,813 tons, valued at £24,763; 2,160 tons of this quantity were shipped to Rotterdam, and 1,500 tons to the United States.||

*Iron and Manganese.*—The ores of these two metals occur and are worked in the Laurium district, and in Grammatikon, Siphnos, Seriphos, Thermia and Milos. Large quantities of iron ore have recently been discovered. The deposits of iron ore in Seriphos occur in the west part of the island, and the amount exported therefrom in 1903 was 166,662 tons; the ore contains from 47 to 52 per cent. of metal.||

*Magnesite.*—Rich deposits of this mineral are a source of wealth to the Island of Eubœa.

*Marble.*—The marble industry of Greece is of considerable importance, and many of the quarries known to the ancients are being re-worked by English companies, viz., at Larissa and Pentelicon on the mainland, and in the islands of Skyros, Eubœa, and Tinos. One British Company (Mamor Limited), obtained over 5 million cubic metres of marble from its quarries in 1903.¶

*Salt.*—This is obtained from sea water at Anavyssos, near Laurium, and in the island of Leucados. The industry is a Government monopoly.

*Sulphur.*—Among other mineral products Milos supplies sulphur.

*Zinc.*—Calamine and blende occur with lead ore in the Laurium district.

TABLE 457.  
PERSONS EMPLOYED at MINES during the Year 1900.\*\*

	Year.	Total Under and Above Ground.
	1900     ...     ...	9,500

\* Whitehead, "Report on the German Colonies for the Years 1902-03." *Dipl. and Cons. Reports*, No. 3,296, Ann. Ser. [Cd. 2236-40], London, 1904, p. 31.

† Harvey, "Finances, Economic Progress and Agriculture of Greece for the year 1904." *Dipl. and Cons. Reports*, No. 3,302, Ann. Ser. [Cd. 2236-46], 1904, p. 17.

‡ Bennett, "Report on the Mineral Resources of Greece." *Dipl. and Cons. Reports*, No. 576, Misc. Ser. [Cd. 787-12], London, 1902, with two maps.

§ Consul Merlin, "Trade and Agriculture of the Province of Thessaly for the year 1903." No. 3,148, Ann. Ser., 1904 [Cd. 1766-82], p. 8.

|| Consul Cottrell, "Trade of the Cyclades for the year 1903." *Dipl. and Cons. Reports*, No. 3179, Ann. Ser., 1904 [Cd. 1766-113], p. 9.

¶ Consul Walsh, "Trade and Agriculture of Piræus and District for the year 1903." *Dipl. and Cons. Reports*, No. 3164, Ann. Ser., 1904 [Cd. 1766-100].

\*\* Official Return furnished by the Bureau of Mines, Athens. Later figures not available.



GREECE—continued.

TABLE 458.

QUANTITY and VALUE of MINERALS produced during the Years 1902 and 1903.\*

Mineral.	1902.		1903.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Bromite ... ..	11,680	467,200		
Emery ... ..	4,727	503,425		
Gypsum... ..	10	900		
Iron ore... ..	546,409	5,464,090		
Lead (argentiferous pig lead) ...	15,668	7,050,600		
„ ore... ..	19,527	722,499		
Lignite ... ..	8,546	85,460		
Magnesite ... ..	32,562	390,744		
Manganese ore ... ..	14,962	448,860		
Millstones ... .. Pieces	13,000	32,500		
Salt from sea water ... ..	25,000	500,000		
Sulphur ... ..	1,391	125,190		
Zinc ore ... ..	18,020	1,621,800		
Total value in francs ... ..	—	17,413,268		
„ „ £ sterling ... ..	—	£696,531		

TABLE 459.

DEATHS from ACCIDENTS at MINES during the Year 1900.‡

	Year.	Total Under-ground and Above-ground.	Death-rate per 1,000 Persons Employed.
	1900 ... ..	9	·95

Greenland. (See DENMARK.)

\* Official Return furnished by the Bureau of Mines, Athens.  
† Figures for 1903 not yet received.  
‡ Later information not available.

Guatemala.\*

he following minerals are found in different parts of the Republic, viz., the ores  
mony, copper, gold, iron, lead, manganese, silver and zinc, besides coal, ligni  
phite, gypsum, marble, mica, salt, sulphur, talc, and turquoises.

Hydraulic mining for gold is carried on at Las Quebradas, and the mines  
ported to yield large profits to the owners.

Seams of Bituminous coal from 1 to 4 feet thick exist in many localities within a f  
miles of the Port of Livingston, but are not worked.

Hayti.†

Coal has been found in various districts, and a little gold washing done in the Nor  
of the Island. Copper and Iron have been worked near Gonaïves, apparently wi  
satisfactory results. 20 tons of copper were shipped in 1903, principally from Port  
Prince and Aux Cayes.

Herzegovina. (See AUSTRIA-HUNGARY.)

Holland.‡

Holland possesses immense peat bogs,§ which produce about 100 million hectoli  
of good fuel annually. Since 1893 the turbaries have been further utilized for mal  
peat litter. There are now nine factories producing it; they employ about 2,500 per  
and their total output is more than 220,000 tons of peat litter a year.

There are coal mines at Heerlen and Kerkrade||; and underground stone qu  
are worked at Maastricht and Valkenberg.

TABLE 460.

PERSONS EMPLOYED at MINES during the Years 1902 and 1903.

Year.	Under-ground.			Above-ground.			To Under- a Above
	Males.	Females.	Total.	Males.	Females.	Total.	
1902 ...	1,159	—	1,159	420	—	420	!
1903 ...	1,519	—	1,519	570	—	570	

\* Consul Hervey, "Trade, Finance and Agriculture of Guatemala for the Years 1902-1903." *Dipl. a*  
No. 3,238, Ann. Ser., 1904 [Cd. 1766-172], pp. 16 and 17.  
† Consul-General Vansittart, "Trade and Finances of the Republic of Hayti for the Year 1903." *Dipl.*  
No. 3,205, Ann. Ser., 1904 [Cd. 1766-189], p. 7.  
‡ Official Returns furnished by the Government of the Netherlands.  
§ Rommenhöller, *Mouvement du Commerce et de l'industrie des pays-Bas durant l'exercice 1898*. Rotterdam.  
|| Böttgenbach, "Die Geologie des alten Herzogthums Limburg." *B.u.h. Zeitung*, Vol. LVII, 1898. p. 3

## HOLLAND—continued.

TABLE 461.

PERSONS EMPLOYED at MINERAL WORKINGS other than MINES during the Years  
1902 and 1903.

Year.	Under-ground.			Above-ground.			Total Number of Persons Employed in and about Mineral Workings other than Mines.
	Males.	Females.	Total.	Males.	Females.	Total.	
1902 ...	50	—	50	40	—	40	90
1903 ...	60	—	60	50	—	50	110

TABLE 462.

QUANTITY and VALUE of MINERALS produced during the Years 1902 and 1903.

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
		Florins.		Florins.
Building stone ... Cubic Metres	8,000	16,000	4,000	8,000
Coal ... ... Metric Tons	399,133	2,247,005	487,777	2,751,096
Total value in Florins ...	—	2,263,005	—	2,759,096
" " £ sterling ...	—	£188,584	—	£229,925

TABLE 463.

DEATHS from ACCIDENTS at MINES during the Years 1902 and 1903.

Year.	Under-ground.			Above-ground.			Total Number of Deaths Under and Above Ground.	Death-rate per 1,000 Persons Employed.	
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Under and Above Ground.
1902	2	—	2	—	—	—	2	1·73	1·27
1903	4	—	4	—	—	—	4	2·63	1·91

There were no fatal accidents at the underground stone quarries in 1902 and 1903.



Honduras.\*

Although there is a marked improvement in the value of the output in 1901 compared with that of 1900, it appears from the Consular report that foreign labour and capital are needed, and that some inducements should be held out to colonists by the Government in order to make the mining industry advantageous to the Republic. The exports of minerals during the two years ending 30th June, 1900 and 1901, respectively, were as follows :—

TABLE 464.

Mineral	1900.	1901.
	Value.	Value.
Copper ... ..	£ 296	£ 111
Gold ... ..	4,001	10,987
Ore (unspecified) .. ...	3,247	5,504
Salt ... ..	—	1,248
Silver { Bar ... ..	63,135	114,965
	Coined .. ...	28,434

Indo-China.

ANNAM.

Annam and Tong-King possess large deposits of coal, iron ore, and argentiferous lead ore ; besides having also asbestos, graphite, kaolin, and marble, and the ores of antimony, copper, gold, manganese, nickel, quicksilver, and tin.†

The average output of the Nong-son coal mines is at the rate of 100 tons a day.‡

Iron ore§ is being smelted on a very small scale by the natives at Nho-Lam in the province of Quang-nam.

COCHIN CHINA.||

6,200 kilograms of jet, valued at 12,400 francs, were obtained from mines in the island Phu-Quoc in the year 1895 ; but the mines do not appear to have been worked since, as no quantity is reported in the French statistics. In 1902, 28,766 tons of salt were exported.‡

TONG-KING.¶ (See also ANNAM.)

The “ Société Française des Charbonnages du Tonkin ” produced 316,618 tons of coal in 1902, and exported 209,626 tons of coal, valued at 4,192,500 francs, in 1903 ; 9,861 tons of briquettes were also exported in the latter year. The Kebao Mines in 1902 produced 1,200 tons of coal. At the Hongay Mines, 2,500 persons are employed.\*\*

\* Consul Campbell, “ Trade of Honduras for the years 1899–1900 and 1900–1901. ” *Dipl. and Cons. Reports*, No. 2,756 Ann. Ser., 1902 [Cd. 786–60], pp. 5 and 7.

† *B.u.h. Zeitung*, Vol. LVIII., 1899, p. 292.

‡ Vice-Consul O’Connell, “ Trade of Cochin China for the year 1903. ” *Dipl. and Cons. Reports*, No. 3,181, Ann. Ser., 1904 [Cd. 1766–115].

§ Consul Tremleff, “ Trade of Saigon and District for the Year 1897. ” *Dipl. and Cons. Reports*, No. 2,060, Ann. Ser., 1898 [C. 8648–82].

|| *Statistique de l’Industrie Minérale en France et en Algérie, pour l’année 1896*, p. 76.

¶ Return furnished by the French Government and published in *Statistique de l’Industrie Minérale en France et en Algérie, pour l’année 1903*, p. 68, and *Op. Cit.* O’Connell.

\*\* Consul Litlle, “ Trade of Indo-China for the year 1902. ” *Dipl. and Cons. Reports*, No. 3,117, Ann. Ser., 1904 [Cd. 1766–51].

INDO-CHINA.—TONG-KING—*continued.*

Copper of good quality is produced from the mines in the provinces of Sontay, Langson, and Laokay.

Iron mines are numerous and productive in the provinces of Hanoy, Thainguayen\* and Sontay.

Deposits of Nickel have been discovered in the province of Tuyenquang\*.

## Italy.†

Some useful information concerning the mineral industries (especially Marble and Sulphur) of Italy is given in the catalogue of the exhibits shown by the Government at the St. Louis Exhibition of 1904. The nature of the principal kinds of mines and quarries may be briefly stated as follows :—

Sulphur is the most important mineral raised in the kingdom, and the bulk of it is obtained from Sicily. Next come zinc and lead ore; these are far more largely worked in Sardinia than in the peninsula itself. Again, in the case of iron ore, it is an island, Elba, which is the mainstay of the industry. England received only 37 per cent. of the Elban output in 1903, and according to a Consular report this shipment will probably be the last exported, as in consequence of a large increase in the production of iron goods in Italy there will not be sufficient ore to supply local needs.‡ The marble quarries of the Apuan Alps have long been a source of wealth to the country.

The following are a few particulars concerning some of the minerals :—

*Alunite.*—Quarrying natural alum-stone is a very old industry in the Tolfa hills north-east of Civita Vecchia. The open workings have now given place to underground mining, but the total output at the present day amounts to only a few thousand tons annually.

*Asphalt.*—A large quantity of bituminous limestone is quarried at Ragusa Superiore in the province of Syracuse. The principal seam is from 13 feet to 20 feet (4 to 6 m.) in thickness, and contains from 16 to 50 per cent. of bitumen. Over 60,000 tons were exported from Sicily in 1903.§

*Boric Acid.*—The amount of boric acid produced from the natural steam-puffs (*soffioni*) in the provinces of Pisa and Grosseto varies from two to three thousand tons yearly.

*Coal.*—Italy greatly lacks supplies of fossil fuel. Its total output in 1903 was only 46,887 tons, of which 342,219 tons were lignite, 2,645 tons anthracite, and 2,023 tons bituminous shale. Most of the lignite came from Tuscany, and the anthracite from the provinces of Cagliari (Sardinia) and Turin.

*Copper.*—The principal mines are in Tuscany.

*Gold.*—The gold veins in the flanks of Monte Rosa in Turin were worked by the Romans, and still continue to supply small quantities of the precious metal.

*Granite.*—Piedmont boasts of excellent red granite and white granite, and the quarries at Baveno and Mont'Orfano on the Lago Maggiore are worked upon an extensive scale.

*Iron.*—The thick deposits of iron ore in the Island of Elba have been worked for many centuries, and are not yet exhausted. The ore is obtained in open quarries. The total output of 374,790 tons shows a substantial increase on the quantity obtained in 1902. The two blast furnaces erected at Portoferraio with the object of treating some of the second class ore on the spot are capable of producing 550 tons of pig iron daily.‡

\* Consul Little, "Trade of Indo-China for the year 1902," *Dipl. and Cons. Reports*, No. 3117, Ann. Ser., 1904 [Cd. 1766-51].

† *Catalogo della Mostra fatta dal Corpo Reale delle Miniere all'Esposizione Universale di St. Louis nel 1904*, Rome, 1904, and *Ricista del Servizio Minerario nel 1903*, Roma, 1904.

‡ Vice-Consul Tonietti, "Trade of Elba for the years 1902-03," *Dipl. and Cons. Reports*, No. 3319, Ann. Ser., 1904 [Cd. 2236-63], p. 4.

§ Consul Churchill, "Trade of Sicily for the year 1903," *Dipl. and Cons. Reports*, No. 3213, Ann. Ser., 1904 [Cd. 1766-147], p. 16.



## ITALY—continued.

*Lead and Zinc.*—Sardinia is remarkable for its deposits of the ores of lead and zinc. Malfidano, in the province of Cagliari, is the most important zinc mine in the island. It employs 2,000 workmen, and produces annually on an average 51,500 tons of zinc ore, worth nearly £150,000.

*Marble.\**—The well-known Carrara marble is obtained from beds of crystalline limestone of Triassic age, which in places attain the enormous thickness of more than 3,000 feet (1,000 m.). In addition to the finest white statuary marble, the quarries furnish many coloured varieties, each known in commerce by its special name.

The importance of the industry may be gauged by the fact that the quarries and dressing establishments of the Apuan Alps gave work to 11,948 persons in 1903, or about the same number as are employed in all the open slate quarries of North Wales.

*Quicksilver.*—Cinnabar is obtained at Monte Amiata in Tuscany.

*Salt.*—The deposits of rock salt worked in Sicily belong to the Upper Miocene period, and lie geologically above the sulphur-bearing rocks. The Sicilian mines produced 18,531 tons in 1903, and the province of Cosenza 7,380 tons. Salt is obtained from sea water by solar evaporation, and especially in Sardinia and Sicily. The total output of sea salt in 1903 was 451,633 tons.

*Sulphur.*—The sulphur of Sicily is found in seams and lenticular masses in rocks of Upper Miocene age, and mainly in the provinces of Caltanissetta and Girgenti. In the year 1903 there were 940 mines at work, employing 31,776 workmen and the output of sulphur-bearing rock was 3,428,691 tons. The amount of sulphur obtained was 522,274 tons.

The proportion of the total output of sulphur extracted by the old-fashioned kilns (*calcaroni*) goes on diminishing from year to year. Twelve years ago 74·5 per cent. of the total output was obtained in this manner, 17 per cent. by kilns with communicating chambers, and 8·5 per cent. by steam apparatuses; last year the corresponding proportions were 31·5, 55·6 and 12·7 per cent. The Sanfilippo kiln, which was recently introduced for treating the fine mineral (*sterri*) continues to give good results.†

*Volcanic Lava and Ash.*—Basaltic lava is quarried on a large scale at the foot of Vesuvius, and so is volcanic ash known as “*pozzolana*.” Similar products are obtained near Rome. The Island of Lipari exported 9,827 tons of pumice stone in 1903.

TABLE 465.

NUMBER OF MINERAL WORKINGS, VALUE OF OUTPUT, and NUMBER OF PERSONS EMPLOYED in the Years 1902 and 1903.‡

Kind of Workings.	1902.			1903.		
	Number at Work.	Total Value of Output.	Number of Persons Employed.	Number at Work.	Total Value of Output.	Number of Persons Employed.
Mines, &c. ...	1,580	Lire. 77,965,597	63,270	1,604	Lire. 85,593,615	62,954
Quarries ...	11,495	40,132,305	57,950	11,556	41,164,562	58,837
Turbaries ...	51	380,544	855	49	297,764	732
Sea salt ...	65	2,873,954	2,877	65	3,005,206	2,894
Total ...	—	Lire 121,352,400 £ sterling 4,854,096§	124,952	—	Lire 130,061,147 £ sterling 5,002,446§	125,417

\* Consul Keene, “Trade of Consular District of Genoa for the year 1901.” *Dipl. and Cons. Reports*, No. 2,820, Ann. S. [Cd. 786-124]. London, 1902, p. 36.

† *Rivista del Servizio Minerario nel 1902*, p. 116 and plate, and *nel 1903*, p. 113.

‡ *Op. cit. nel 1902*, pp. xxviii., xxxiii., and liii., and *nel 1903*, pp. xxxi., xxxvii., and lviii.

§ Value calculated at 25 lire = 1*l.* sterling.



## INDO-CHINA.—TONG-KING—continued.

Copper of good quality is produced from the mines in the provinces of Sontay, Langson, and Laokay.

Iron mines are numerous and productive in the provinces of Hanoy, Thainguyen\* and Sontay.

Deposits of Nickel have been discovered in the province of Tuyenquang\*.

## Italy.†

Some useful information concerning the mineral industries (especially Marble and Sulphur) of Italy is given in the catalogue of the exhibits shown by the Government at the St. Louis Exhibition of 1904. The nature of the principal kinds of mines and quarries may be briefly stated as follows:—

Sulphur is the most important mineral raised in the kingdom, and the bulk of it is obtained from Sicily. Next come zinc and lead ore; these are far more largely worked in Sardinia than in the peninsula itself. Again, in the case of iron ore, it is an island, Elba, which is the mainstay of the industry. England received only 37 per cent. of the Elban output in 1903, and according to a Consular report this shipment will probably be the last exported, as in consequence of a large increase in the production of iron goods in Italy there will not be sufficient ore to supply local needs.‡ The marble quarries of the Apuan Alps have long been a source of wealth to the country.

The following are a few particulars concerning some of the minerals:—

*Alumite.*—Quarrying natural alum-stone is a very old industry in the Tolfa hills north-east of Civita Vecchia. The open workings have now given place to underground mining, but the total output at the present day amounts to only a few thousand tons annually.

*Asphalt.*—A large quantity of bituminous limestone is quarried at Ragusa Superiore in the province of Syracuse. The principal seam is from 13 feet to 20 feet (4 to 6 m.) in thickness, and contains from 16 to 50 per cent. of bitumen. Over 60,000 tons were exported from Sicily in 1903.§

*Boric Acid.*—The amount of boric acid produced from the natural steam-puffs (*soffioni*) in the provinces of Pisa and Grosseto varies from two to three thousand tons yearly.

*Coal.*—Italy greatly lacks supplies of fossil fuel. Its total output in 1903 was only 346,887 tons, of which 342,219 tons were lignite, 2,645 tons anthracite, and 2,023 tons bituminous shale. Most of the lignite came from Tuscany, and the anthracite from the provinces of Cagliari (Sardinia) and Turin.

*Copper.*—The principal mines are in Tuscany.

*Gold.*—The gold veins in the flanks of Monte Rosa in Turin were worked by the Romans, and still continue to supply small quantities of the precious metal.

*Granite.*—Piedmont boasts of excellent red granite and white granite, and the quarries at Baveno and Mont'Orfano on the Lago Maggiore are worked upon an extensive scale.

*Iron.*—The thick deposits of iron ore in the Island of Elba have been worked for many centuries, and are not yet exhausted. The ore is obtained in open quarries. The total output of 374,790 tons shows a substantial increase on the quantity obtained in 1902. The two blast furnaces erected at Portoferraio with the object of treating some of the second class ore on the spot are capable of producing 550 tons of pig iron daily.‡

\* Consul Little, "Trade of Indo-China for the year 1902," *Dipl. and Cons. Reports*, No. 3117, Ann. Ser., 1904 [Cd. 1766-51].

† *Catalogo della Mostra fatta dal Corpo Reale delle Miniere all'Esposizione Universale di St. Louis nel 1904.* Rome, 1904.

‡ *Rivista del Servizio Minerario nel 1903.* Roma, 1904.

§ Vice-Consul Tonietti, "Trade of Elba for the years 1902-03," *Dipl. and Cons. Reports*, No. 3319, Ann. Ser., 1904 [Cd. 2236-63], p. 4.

¶ Consul Churchill, "Trade of Sicily for the year 1903," *Dipl. and Cons. Reports*, No. 3213, Ann. Ser., 1904 [Cd. 1766-147], p. 16.



## ITALY—continued.

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	Number at Work.	Total Value of Output.	Number of Persons Employed.	Number at Work.	Total Value of Output.	Number of Persons Employed.
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Quarries ...	11,495	40,132,305	57,950	11,556	41,164,562	58,837
Turbaries ...	51	380,544	855	49	297,764	732
Sea salt ...	65	2,873,954	2,877	65	3,005,206	2,894
Total ...	—	Lire 121,352,400 £ sterling 4,854,096§	124,952	—	Lire 130,061,147 £ sterling 5,002,446§	125,417

\* Consul Keeue, "Trade of Consular District of Genoa for the year 1901." *Dipl. and Cons. Reports*, No. 2,820, Ann. Ser. [Cd. 786-124]. London, 1902, p. 36.

† *Rivista del Servizio Minerario nel 1902*, p. 116 and plate, and *nel 1903*, p. 113.

‡ *Op. cit. nel 1902*, pp. xxviii., xxxiii., and liii., and *nel 1903*, pp. xxxi., xxxvii., and lviii.

§ Value calculated at 25 lire = 11. sterling.

ITALY—continued.

TABLE 467.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, TURBARIES, and SALT WORKS during the Years 1902 and 1903.\*

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Lire.	Metric Tons.	Lire.
Alum-stone ... ..	8,200	61,500	8,100	48,600
Antimony ore ... ..	6,116	258,386	6,927	209,797
Arsenical pyrites ... ..	—	—	50	4,000
Asphalt, &c. ... ..	64,245	759,145	89,690	1,233,316
Boric acid ... ..	2,763	884,160	2,583	774,900
Copper ore ... ..	101,142	2,789,716	114,823	2,955,100
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	414,569	3,348,861	346,887	2,940,916
Gas, carburetted hydrogen (cubic metres).	1,519,703	56,840	2,255,596	77,844
Gold ore... ..	1,215	51,348	5,734	123,337
Graphite ... ..	9,210	179,670	7,920	149,510
Iron ore... ..	240,705	3,835,066	374,790	5,409,905
„ „ manganiferous ... ..	23,113	286,601	4,735	58,714
Iron pyrites (cupreous) ... ..	93,177	1,565,932	101,455	1,617,370
Lead ore ... ..	42,330	5,687,293	42,443	5,480,493
Manganese ore ... ..	2,477	103,740	1,930	58,650
Mineral waters ... ..	30,813	411,278	31,017	412,503
Peat ... ..	25,448	380,544	20,922	297,764
Petroleum ... ..	2,633	778,163	2,486	737,293
Quicksilver ... ..	44,261	1,234,158	55,528	1,327,962
Rock salt ... ..	23,677	382,638	25,911	395,586
Salt from springs ... ..	10,581	300,534	10,962	316,649
Salt, sea ... ..	424,239	2,873,954	451,633	3,005,206
Silver ore ... ..	421	277,681	405	235,890
Sodium sulphate ... ..	—	—	340	1,392
Sulphur, rock ... ..	3,581,671	42,650,944	3,690,532	43,852,437
Zinc ore ... ..	(a) 149,965	12,061,943	(b) 159,878	17,171,451
Produce from quarries (value) ...	—	40,132,305	—	41,164,562
Total value in lire ... ..	—	121,352,400	—	130,061,147
„ „ £ sterling ... ..	—	£4,854,096	—	£5,202,446

TABLE 468.

ACCIDENTS at MINES, arranged according to CAUSES, during the Years 1902 and 1903.

Cause.	1902.					1903.				
	No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.		No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.	
				Per 1,000 Persons Employed.	Per 1,000,000 liras' worth of Mineral produced.				Per 1,000 Persons Employed.	Per 1,000,000 liras' worth of Mineral produced.
Falls of ground ...	115	53	80	·84	·68	102	56	62	·89	·65
Suffocation by gases, explosions, and fires.	15	15	15	·24	·19	20	27	59	·43	·32
Falling down shafts, &c., and miscellaneous.	62	14	49	·22	·18	82	27	58	·43	·32
Blasting ... ..	17	4	19	·06	·05	8	—	9	—	—
Total ... ..	209	86	163	1·36	1·10	212	110	188	1·75	1·29

\* *Rivista del Servizio Minerario nel 1902*, pp. xx., xxviii., liii. and lvi. and *nel 1903*, pp. xxiii., xxxi., xlviii., xlix. and lviii.

† Ditto, *nel 1902*, p. lxii. and *nel 1903*, p. lxxii.

(a) Including 18,000 tons of copper, lead and zinc ore, of the value of 360,000 lire.

(b) „ 2,357 „ „ „ „ „ „ „ 27,240 „



A serious disaster\* occurred on the 13th August, 1903, at Giumentaro Mine in the Castrogiovanni district, by which five men were suffocated and 33 more or less partially so by the inhalation of sulphurous anhydride. It appears that the sulphur ore in the mine was set on fire by an explosion, and, although the fire was soon extinguished, the ventilation became reversed. The miners who were escaping towards the surface were overcome by the suffocating gas.

TABLE 469.

ACCIDENTS at QUARRIES, arranged according to CAUSES, during the Years 1902 and 1903.†

Cause of Accident.	1902.				1903.			
	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed.	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed.
Falls of ground ... ..	47	42	29	·72	35	34	10	·58
Falling down workings, and miscellaneous.	23	11	12	·19	19	8	15	·14
Blasting ... ..	1	—	1	—	6	2	11	·03
Total ... ..	71	53	42	·91	60	44	36	·75

### Italian Possessions. (See ERITREA.)

### Ivory Coast.‡

The development of the gold mines of the Ivory Coast is being pushed forward, particularly in the Sanwi and Indeni districts of the eastern portion of the Colony. The gold is obtained both from quartz reefs and from detrital deposits. The quantity of gold dust exported during the first half of the years 1902 and 1903 was valued at £2,855 and £280 respectively. Fossil gum opal is fairly abundant near Thiassalé and other places.

### Japan.

An account§ of the mining industry accompanied by a map shewing the locality of the principal mines was published by the Japanese Government for the St. Louis Exhibition of 1904.

The mineral resources of Japan are undoubtedly great, and it is recorded that gold, silver, copper, iron, coal and petroleum have been produced since the 7th or 8th century, but it appears that no marked progress was made in working the deposits until after the year 1868, when the Government adopted Western methods in its Mining and Metallurgical Departments.

\* *Op. cit.* 1902, p. lxvi., and *acel* 1903, p. lxxvi.

† *Rivista del Servizio Minerario nel* 1903, pp. 68, 70-72.

‡ Acting Consul Mackie, "Trade of Senegal and Dependencies for the year 1902," *Dipl. and Cons. Reports*, No. 3,089, Ann. Ser., 1903 [Cd. 1,766-23], pp. 23-25, and Vice-Consul Armstrong, "Trade of the Ivory Coast for the year 1903," *Dipl. and Cons. Reports*, No. 3,316, Ann. Ser., 1904 [Cd. 2236-60], p. 7.

§ *Sketch of the Mining Industry in Japan*, published by the Bureau of Mines of the Department of Agriculture and Commerce of Japan for the Louisiana Purchase Exposition, 1904.

JAPAN—continued.

Some idea of the importance of the mineral wealth of the country may be gathered from the fact that the value of the output for the year 1902 amounted to more than 7 million sterling, and the mines gave employment to 155,379 persons.

A few particulars concerning the most important minerals are given below :—

*Coal.*—The coal of Japan is mainly bituminous and most of the seams belong to the Tertiary period. There are four chief coal-fields, three of which are situated in the Island of Kiushiu, viz. :—Chiku-ho in the Fukuoka district, from which more than half of the total output is obtained ; Miike in the Kumanoto district ; Takashiro in the Nagasaki district, and the Ishikari in the Island of Hokkaido. Nearly 3 million tons of coal were exported in 1902, and nearly 3½ million tons in 1903\*.

*Copper.*—The copper mines are the most numerous of the metal mines in Japan. They are situated principally in Shimozuke, Ugo, Kaga and Bitchu. The ores contain more or less gold and silver. The total output of refined copper in 1902 was 28,500 tons and in 1903, 33,500 tons.\*

*Gold.*—Alluvial deposits of gold are being worked in the district of Esashi in the Island of Hokkaido.† The principal mines from which auriferous quartz is obtained are in the provinces of Echigo and Satsuma. Gold also occurs in Formosa ; the mines and alluvial diggings are in the neighbourhood of Kelung, and their output in 1902 was 48,400 ozs.‡

*Iron Ore.*—The deposits of iron ore in Japan occur chiefly in the form of either magnetic or micaceous iron. The mines are in Rikuchu, Echigo and Kozuke.

*Petroleum.*—The oil-bearing area is very extensive, stretching over the Island of Hokkaido, and the provinces of Echigo, Uzen, Ugo, Shinano, and Totomi. The most important oilfields are situated in Echigo on the west coast of Japan. The output of petroleum from the latter in 1903 was 1,500,000 cases or 56,700,000 litres.

*Salt.*—The salt is mainly obtained by the process of evaporation of sea water at various places along the coast. The island of Formosa produced 48,560 tons in 1901 and exported 37,433 tons in 1902 and 18,517 tons in 1903.§

*Sulphur.*—Owing to the volcanic nature of the country Japan has very rich deposits of sulphur. The mineral is principally worked in Rikuchu and in Hokkaido.

TABLE 470.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1902 and 1903.||

Kind of Workings.	Persons Employed in the Year.	
	1902.	1903.
Coal Mines ... ..	78,894	84,941
Metal Mines ... ..	60,339	64,859
Other Non-metallic Mines ...	7,706	7,329
Placer Mining ... ..	8,440	6,401
Total ... ..	155,379	163,530

\* Barclay "Trade of Japan for the year 1903." *Dipl. and Cons. Reports*, No. 3,212, Ann. Ser., 1904. [Cd. 1,766-146].  
† Forster, "Trade of Hokkaido for the year 1902." *Dipl. and Cons. Reports*, No. 3,030, Ann. Ser., 1903 [Cd. 1,386-107], p. 13.  
‡ Consul R. de B. Layard, "Trade of North Formosa for the year 1902." *Dipl. and Cons. Reports*, No. 3,054, Ann. Ser. 1903 [Cd. 1,386-131], p. 14.  
§ Consul Kenny, "Trade of South Formosa for the years 1900 and 1901." *Dipl. and Cons. Reports*, No. 2,796, Ann. Ser. 1902, p. 10 and Consul Wileman, *op. cit.* for 1903. No. 3,276, 1904 [Cd. 2,236-20] p. 13.  
|| *Twentieth Statistical Report of the Department of Agriculture and Commerce of Japan* ; Tokyo and Osaka, 1905 ; and Sketch of the Mining Industry in Japan, published by the Bureau of Mines, 1904.

## JAPAN—continued.

TABLE 471.

QUANTITY and VALUE of MINERALS and METALS produced during the Years 1902\* and 1903.†

Mineral or Metal.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Antimony, crude } (metal)...	88	1,149	153	1,724
„ refined }	528	12,626	434	9,320
Asphalt ... ..	—	—	357	97
Arsenic (metal) ... ..	12	173	6	88
Bismuth ... ..	—	—	Kilos. 171	93
Coal ... ..	9,701,682	3,302,241	10,088,845	2,968,157
Copper (metal) ... ..	29,034	1,407,621	33,245	1,761,929
Gold (Fine) (a) ... ..	Kilos. 2,981	406,380	Kilos. 3,140	428,058
Graphite ... ..	97	2,032	114	2,253
Iron, pig ... ..	32 186	122,344	33,870	129,623
„ pyrites ... ..	18,581	2,893	16,149	2,642
„ vitriol ... ..	192	321	85	131
Lead (metal) ... ..	1,644	19,370	1,728	20,912
Manganese ... ..	10,866	6,863	5,616	3,828
Mercury ... ..	Kilos. 1,418	315	Kilos. 206	46
Ochre ... ..	21	241	59	228
Peat ... ..	41,034	6,569	49,862	7,012
Petroleum, crude ... ..	Litres 158,353,631	212,823	Litres 192,137,021	288,773
Phosphorus ... ..	196	123	191	123
Salt ... ..	620,820	908,466	657,489	965,543
Silver (metal) ... ..	Kilos. 57,643	198,372	Kilos. 58,704	201,678
Stones and earth :—				
Building stone ... ..	—	254,585		
Limestone ... ..	—	110,936		
Clay ... ..	—	112,637	‡	‡
China Clay ... ..	—	21,558		
Miscellaneous ... ..	—	20,111		
Sulphur ... ..	18,287	45,266	22,914	58,572
Tin (metal) ... ..	19	1,906	19	2,031
Total value ... ..	—	7,177,921	—	6,852,861

(a) Not including the output of Formosa.

TABLE 472.

ACCIDENTS at MINES during the Years 1902\* and 1903.†

Kind of Mines.	1902.		1903.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal ... ..	135	1.71	215	2.53
Metal .. ..	177	2.93	85	1.31
Other Non-metallic ... ..	16	2.08	9	1.23
Total ... ..	328	2.23§	309	1.97§

Of the 215 persons killed by accidents at coal mines in 1903, 43 deaths were caused by “falls of ground,” and 125 deaths by fires and explosions of gas.

\* The Nineteenth Report of the Department of Agriculture and Commerce, Tokyo, 1904, pp. 787-790.

† Twentieth Statistical Report of the Department of Agriculture and Commerce of Japan, Tokyo and Osaka, 1905; and sketch of the Mining Industry in Japan, published by the Bureau of Mines, 1904.

‡ Figures not received.

§ Excluding Workers in Placer Mining.



**Java.** (See DUTCH EAST INDIES.)

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**Johore.\***

Gold has been found in one or two places, and a mine is being worked near Mount Ophir, in the Province of Muar. The country is rich in iron ore, but the mineral is not worked. Important deposits of tin have been discovered in several places, and a considerable amount of tin mining is now carried on in the Ulu Johore districts, and some at Bukit Mor, Padang.

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**Liberia.†**

It is supposed that Liberia contains much mineral wealth, and some prospecting for gold is going on, but up to the present time no payable reef has been discovered. Deposits of corundum have been found in Maryland. Copper and quicksilver are reported to exist. Iron has been worked for a long time by the natives in the interior.

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**Lourenço Marques.** (See PORTUGUESE EAST AFRICA.)

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**Luxemburg.**

The only important mineral production of the Grand Duchy of Luxemburg is iron ore. On account of the commercial connection of Luxemburg with Germany, the returns of the mines are given in the German Mineral Statistics, and will be found under "German Empire."

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**Madagascar.‡**

The mineral wealth of the island appears to be great. In addition to gold, which is found in alluvial deposits widely spread over the island, the ores of antimony, copper, iron and tin are said to be abundant, to say nothing of asphalt, coal, and petroleum.

According to Consul Porter, rich deposits of alluvial gold have been discovered in the valley of the Amboasary, a tributary of the Mananjary river, about 40 miles east of the town of Ambositra. The auriferous gravel is washed in pans by the natives, of whom about 3,000 are at work; it is however expected that reef mining, which is now beginning to attract attention, will in the next few years supersede the present primitive methods of gold extraction. The district is unhealthy owing to the prevalence of fever.

Gold mining in the island is now regulated by the Decree of the 20th February, 1902, which affords many facilities for working which were not permissible under the old law of July, 1896.

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\* *The Singapore and Straits Directory for 1904.* Singapore, 1904, pp. 341 and 343.

† Consul MacDonell, "Trade of Liberia for the year 1903." *Dipl. and Cons. Reports*, No. 3,135, Ann. Ser., 1904 [Cd. 1766-69], p. 6.

‡ MS. communication to Foreign Office, 5 July, 1900, and Consul Porter, "Trade of Madagascar for the Year 1903." *Dipl. and Cons. Reports*, No. 3254, Ann. Ser., 1904 [Cd. 1,766-188], pp. 11-13.

The output of gold continues to increase. The quantity produced and exported in 1903 was 2,299 kilos (73,915 ozs.), valued at £234,272, as against 1,535 kilos (49,351 ozs.), valued at £164,944 in the previous year.\*

### Mexico.†

Many minerals are obtained in Mexico. The most important are the ores of copper, gold, lead, and silver.

*Asphalt.*—Deposits of asphalt have been worked for many years near Tamihua in the State of Vera Cruz.‡

*Coal.*—Various coalfields have been discovered, and no doubt will gradually become of great value to the Republic. At present the annual output is about 700,000 tons, which is obtained by three companies, the Coahuila, the Fuento, and the Mexican.§ Native coal is used on some of the railways. About 60,000 tons of coke are produced annually.

*Copper.*—The most important copper mines in Mexico are at Boleo, Lower California, and at Cananea, Sonora.‡

*Gems.*—Opals|| are mined extensively in the State of Queretaro.

*Gold.*—The precious metal is found in many of the provinces, but especially in Chihuahua, Sonora, Sinaloa, Guerrero, Sonora, Oaxaca, and Lower California.

*Iron.*—Rich deposits exist,¶ but at present smelting operations are conducted on a small scale.

*Marble.*—The so-called "Mexican onyx" is a handsome marble, obtainable in large blocks, and much prized for decorative purposes.

*Petroleum.*—Sinking operations for petroleum are being carried on at Ebano, near Tampico, and also at Lavin in the State of Tamaulipas.‡

*Silver.*—Mexico now produces over 30 per cent. of the world's output of silver. In 1881 the production of the Republic in ounces was 23 millions, in 1891, 33 millions, in 1901, 57½ millions, and in 1902, 60 millions.\*\* The principal mining districts are in the States of Guanajuato, Zacatecas, San Luis Potosi, and Hidalgo.

TABLE 473.

PERSONS EMPLOYED at MINES during the Years 1901 and 1902.††

Year.	Men.	Women.	Boys.	Total.
1901	92,187	414	5,595	98,196
1902	90,305	613	5,102	96,020

\* *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1903*, p. 68.

† Romero, *Geographical and Statistical Notes on Mexico*. New York and London, 1898, pp. 13-27, and Sellerner, *Data referring to Mexican Mining*. Mexico, 1901.

‡ Consul Jerome, "Trade of the Consular district of Mexico for the year 1903." *Dipl. and Cons. Reports*, No. 3,285, Ann. Ser. 1904 [Cd. 2236-29].

§ Consul Leay, "Trade of Consular District of Vera Cruz for the year 1903." *Dipl. and Cons. Reports*, No. 3,262, Ann. Ser. 1904 [Cd. 2236-6], p. 14.

|| Kunz, "Gems and precious stones of Mexico." *Trans. American Inst. Min. Eng.*, 1901.

¶ Withersbee, "The Iron Mountain, Durango, Mexico." *Trans. American Inst. Min. Eng.*, 1901.

\*\* Leay, *Op. cit.*, p. 5.

†† Official Return furnished by the Ministry of Finance, Mexico.

MEXICO—continued.

TABLE 474.

VALUE of MINERALS exported during the Years 1901-2 and 1902-3.\*

Mineral.	1901-2.		1902-3.	
	Quantity.	Value.	Quantity.	Val.
	Metric Tons.	\$	Metric Tons.	\$
Antimony ore ... ..	3,740	37,401	939	14,
Antimony ... ..	660	316,793	1,702	823,
Asphalt ... ..	134	5,219	227	9,
Coal ... ..	2,819	14,823	700,000†	5,883,
Copper and Copper ore ... ..	61,874	16,849,835	62,131	20,122,
Gold ... ..	Kilos. 13,792	9,315,257	Kilos. 14,200	9,469,
Graphite... ..	580	6,351	1,952	85,
Iron and Iron ore ... ..	92	3,689	269	9,
Lead and Lead ore ... ..	98,422	5,735,840	98,971	5,671,
Marble ... ..	1,030	98,551	1,462	150,
Precious stones... ..	—	1,430	—	
Salt ... ..	246	4,537	891	9,
Silver ... ..	—	59,632,472	—	77,554,
Tin ... ..	Kilos. 76	. 103	Kilos. 2,588	2,
Zinc ore... ..	166	16,639	—	—
Minerals not specified... ..	529	36,240	1,081	41,
Total value in \$ ... ..	—	92,075,180†	—	119,848,
" " £ ... ..	—	10,139,044	—	£12,931,

The output of Fine Gold for the year 1902 was reported to be 491,156 ozs. (*kilos.* 15,2 and of Silver, 60,324,299 ozs. (*kilos.* 1,876,297).†

TABLE 475.

DEATHS from ACCIDENTS at MINES during the Years 1901 and 1902.\*

	Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
	1901 ... ..	330	3·37
	1902 ... ..	220	2·29

\* Official Return furnished by the Ministry of Finance, Mexico.  
† Corrected figures.  
‡ These figures represent the approximate annual output of coal.  
§ Estimated on the value of the quantity (3,044 tons) exported.  
|| Calculated at 10 dollars = £1, except for the value of the Gold which is calculated at 5 dollars to £1.



## Morocco.\*

*Copper.*—In the beginning of the sixties copper ore was still being worked near Tarudant, the capital of the province of Sus. The ore is likewise found in the Tangier region.

*Fuller's Earth.*—In 1903 the quantity of Fuller's earth exported from Tangier and Laraiche was 128 tons.†

*Gold.*—Silver and gold are said to occur in the province of Sus.

*Iron.*—It is probable that the Carthaginians worked the old iron mines, of which remains exist at Djebel Hadid, 14 miles N.E. of Mogador.

*Salt.*—Morocco is rich in salt. Some is found in the beds of dried-up lakes in summer. Rock salt is obtained in the Atlas Mountains, near Demnat; and at Rabat and elsewhere sea water is evaporated by the heat of the sun.

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Netherlands and its Colonies. (See HOLLAND, DUTCH EAST INDIES, AND  
DUTCH WEST INDIES.)

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## New Caledonia.‡

*Chromic Iron.*—New Caledonia produces more chromic iron than any other country except Turkey, and the output in 1903 was twice that of the previous year. The ore exported is good, and gives 50 to 52 per cent. of chromium oxide.

*Cobalt Ore.*—8,292 tons of ore were produced in 1903, containing about 3 to 4 per cent. of metal; an increase of 780 tons as compared with that of 1902.

*Copper Ore.*—The improvement in the output of copper ore as stated in 1902 has not been maintained. In 1903 no quantity is given in the French statistics.

*Nickel Ore.*—The figures for nickel ore in Table 477 show a much lower quantity in 1903 than in the previous year. The ore exported yields from 6 to 8 per cent. of metal.

TABLE 476.

## PERSONS EMPLOYED at MINES during the Year 1898.§

Year.	White.	Coloured.	Total.
1898     ...     ...	3,831	1,259	5,090

\* Fischer, "Die Bodenschätze Maroccos," *Zeitschr. f. prakt. Geologie*, Vol. VIII., 1900, Part 4, p. 110.

† Vice-Consul Smith, "Trade of Tangier and District for the year 1903," *Dipl. and Cons. Reports*, No. 3,322, Ann. Ser. 1904 [Cd. 2236-66], p. 11.

‡ Information furnished by the French Government.

§ *Statistique de l'Industrie Minière en France et en Algérie, pour l'année, 1898*, p. 85. Later figures are not obtainable.



## NEW CALEDONIA—continued.

TABLE 477.  
QUANTITY and VALUE of MINERALS produced and exported during the Years  
1902 and 1903.\*

Mineral.	1902.		1903.	
	Quantity Produced.	Value.	Quantity Exported.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chrome ore ... ..	10,281	463,000	21,437	1,124,000
Cobalt ore ... ..	7,512	2,446,600	8,292	2,109,000
Copper ore ... ..	3,720	365,000	—	—
Nickel ore ... ..	129,653	6,720,000	77,360	3,161,000
Total value in francs ... ..	{ —	{ 9,994,600	{ —	{ 6,394,000
“ “ “ £ sterling	{ —	{ £399,784	{ —	{ £255,760

## Nicaragua.†

The whole of the eastern side of the Cordillera mountains is stated to be very rich in minerals. Most of the gold exported in 1903 was obtained from that locality. At present the mining industry of the Republic is much retarded by the scarcity of labour, of water, and means of communication. The exact output of the mines and alluvial diggings does not appear to be known.

Salt is obtained on the Pacific coast by the evaporation of sea water, but the amount of production cannot be ascertained. In 1903, 545 metric tons, valued at £2,241, were exported to the neighbouring Republics of Honduras, Salvador and Guatemala.

The exports of gold and gold ore are given in the table below.

TABLE 478.  
QUANTITY and VALUE of GOLD exported during the Year 1900, and the value during the  
Year 1902 and 1903.

Mineral.	1900.		1902.	1903.
		£	£	£
Gold (bars and dust) ...	{ Kilos. 575 } { Ozs. 18,500 }	62,000	} 96,870	114,366
Gold ore ... ..	Lbs. 14,050	80,690		

## Norway.‡

Norway is far less important as a mining country than Sweden.

*Apatite*.—This mineral was worked on a large scale some years ago at Oedegaarden, but the output is now comparatively small.

*Copper*.—Copper ore and iron pyrites are the chief metallic products of Norway. They are produced by various mines, among those of which may be mentioned Røros, Sulitelma, Lyngen and Trondhjem.

*Felspar*.—The supply of felspar is derived mainly from veins of pegmatite in Setersdalen in the province of Smaalenene and along the coast between Bamle and Arendal. Quartz and mica are obtained from the same deposits.

*Gems*.—Emeralds are being obtained near Minne, but the production is unimportant.

*Granite*.—Quarries producing granite, syenite, gabbro or porphyry, are worked near Fredrikshald, Frederikstad, Larvik and Drammen. The total value of the granite exported in 1903 is estimated at £165,270.

\* *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1902, and pour l'année 1903.*

† Consul Chambers, "Trade of Nicaragua for the Year 1902." *Dipl. and Cons. Reports*, No. 2,963, Ann. Ser., 1903 [Cd. 1386-40]. and Consul Bingham, *op. cit.* for 1903-4, No. 3337 [Cd. 2236-81], 1905.

‡ Information furnished by the Central Statistical Office, Kristiania, *La Norvège. Ouvrage Officiel publié à l'occasion de l'Exposition Universelle de Paris, 1900.* Kristiania, 1900, p. 295, and Consul-General Dundas, "Trade and Commerce of Norway for the year 1903." *Dipl. and Cons. Reports*, No. 3252, Ann. Ser. 1904 [Cd. 766-186].



### Panama.\*

The Republic possesses rich deposits of auriferous quartz. The principal mine is Cana in the Darien district, which employs about 1,000 persons. The quantity of gold obtained and shipped to Europe in 1903 was 40,570 ozs. valued at £160,189. Manganese ore was obtained from the Nombre de Dios Mine up to June 1902, but owing to a reduction in the price of the metal the operations had then to be suspended, and have not since been resumed.

### Paraguay.

Though many useful ores and minerals are said to exist in Paraguay, they still remain unworked.

### Persia.†

The minerals of the country belong to the Government, and the mines are leased out to private persons. The Ministry of Mines has no account of the number of persons employed, nor of quantity and value of the minerals produced.

The mineral wealth of Persia is great, though it cannot be properly utilized at the present time owing to want of easy means of communication. Deposits of the following useful minerals are known to exist, viz. :—alum, antimony ore, borax, coal, the ores of cobalt, copper, gold, iron, lead and manganese, petroleum, realgar, salt, saltpetre, silver-lead ore, sulphur, and turquoises.

*Coal and Iron.*—There are fine coal deposits‡ near Kerman, and much iron ore of good quality on the slopes of the Elburz range and elsewhere.

*Copper.*—Rich deposits of copper are known. During the year 1902, 11 tons were exported from the Ports of Bushire and Lingah, and copper valued at £160 from the Bahrain Islands.§

*Lead ore.*—Argentiferous lead ore is plentiful, but is worked in a primitive fashion.

*Petroleum.*—In the lower valleys of the province of Kermanshah, near the Turkish frontier, there exists a wide oil area extending south from Kerkuk in Turkey to Shuster in Persia, and even to the Island of Hormuz. The principal oil fields are situated in the province of Kermanshah.||

*Salt.*—Some salt is obtained (by the process of evaporation in tanks) from the salt water which collects in the oil wells of the Province of Kermanshah.|| The following quantities were exported in 1902 :—4,000 tons from Lingah, and 180 tons from Bunder Abbas.§

*Turquoises.*—The annual rent paid for the turquoise mines¶ near Nishapur in Khorassan is £4,800, and the value of the gems produced must therefore considerably exceed that sum.

### Peru.\*\*

No exact data exist concerning the number of persons employed in mines ; but it is estimated at 100,000, including a few females.

The number of persons employed on the coast at the salt works, quarries, and petroleum wells is estimated at 5,000.

The principal minerals of Peru are borate of lime, coal, copper ore, gold, petroleum, salt, and silver ore.

*Borates.*—Though borates occur in various places, the only deposit which is being worked at a profit at the present time, is that of Salinas, near the boundary between the provinces of Arequipa and Moquegua.

\* Consul Mallet "Trade of Panama for the year 1903" *Dipl. and Cons. Reports*, No. 3292, Ann. Ser., 1904 [Cd. 2236-36]

† Helmbacker, "The Mineral Resources of Persia," *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 38, and *B. u. h. Zeitung* Vol. LVIII., 1899, p. 272.

‡ *Berg-und hüt. Zeit.*, Vol. LVIII., 1899, p. 272.

§ Acting Consul General Kemball, "Trade of the Persian Gulf for the year 1902," *Dipl. and Cons. Reports*, No. 3036, Ann. Ser., 1903 [Cd. 1386-113].

|| Consular Agent Rabino "Trade of Kermanshah and Districts for the year 1903-4," *Dipl. and Cons. Reports*, No. 3189, Ann. Ser., 1904 [Cd. 1766-123].

¶ Consul General Temple, "Report on the Trade and Commerce of Khorassan for the Year 1897-98," *Dipl. and Cons. Reports*, No. 2202, Ann. Ser., 1899 [C. 9044-28].

\*\* Garland, *Apuntes sobre la industria minera 1900*. Lima, 1901, and *Mines and Mining in Peru*. Lima, 1903; Consul General St. John, "Trade of Peru for the year 1903," *Dipl. and Cons. Reports*, No. 3281, Ann. Ser., 1904 [Cd. 2236-25]; and *Boletín del Ministerio de Fomento*, Ano. II No. 11, Lima 1904, pp. 46-54.



## PERU—continued.

4.—All the different varieties of mineral fuel exist in Peru, viz.:—peat, lignite, and anthracite. Lignite is found in the Tertiary rocks on the coast and elsewhere. The coal and anthracite are found in the Cretaceous and Jurassic rocks in various places, and a solid hydro-carbon, which is neither coal nor anthracite, occurs in veins, and is likewise worked and sold as mineral fuel. There are very large areas of coal in the department of Ancash and also in the Santa Valley.

*Copper ore.*—Rich veins of copper ore exist in the Cerro de Pasco silver mines and in many other districts.

5.—The provinces which are richest in gold are Sandia, Carabaya, Paucartambo, and Arequipa. The precious metal has been found in paying quantities in the river beds of the two first named districts. The decrease in the total output in 1903 is largely attributed to the suspension of work at the Santo Domingo Mine.\*

*Iron Ore.*—Important deposits of iron ore are known to exist in the department of Arequipa and close to the Southern Railway near Lake Titicaca, but owing to the heavy cost of transport little has been done towards developing them.

*Petroleum.*—The only places where petroleum is being obtained at the present time are on the coast of the department of Piura.

*Silver ore.*—This is the principal mineral worked in Peru; the most important mines are Cerro de Pasco, Hualgayoc, Salpo, Huaylas, Recuay, Cajatambo, Yauli, Huallanca, Chiriqui, Castrovirreyna, Caylloma, Lampa and Puno. The output of silver has diminished considerably, on account of the drop in price of the metal, and the closing of many mines belonging to the Cerro de Pasco Mining Syndicate during the years 1902 and 1903.

6.—The production of salt is a Government monopoly. It is found in abundance on the coast, and occurs in various ways. There are deposits on the coast at Sechura, Tarma, Otuma, Moquegua, &c. In the Andes the salt beds of San Blas are worked on a large scale, and in eastern Peru there is the famous Cerro de la Sal.

*Sulphur.*—Sulphur is found on all the volcanoes of the Andes in considerable quantities, besides occurring in sedimentary deposits in the department of Piura.

TABLE 481.

QUANTITY and VALUE of MINERALS produced during the YEARS 1901, 1902, and 1903.

Mineral.	1901.		1902 †		1903 ‡	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£	Metric Tons.	£
...	4,156	33,248	5,055§	35,380†	2,584‡	19,650
...	45,000	60,000	—	—	—	—
Ore ...	25,173	1,025,250	—	—	—	—
(Fine)...	—	—	9,096†	403,635	9,496	476,824
(Fine) ...	Kilos. 1,830	250,000	Kilos. 3,500¶	477,639	Kilos. 1,078	145,205
(Fine and Metal) ...	114	5,012	193†	1,481	1,302	5,141
(Crude) ...	Galls. 9,567,735	63,064	—	—	37,079	149,290
...	15,849	78,476	—	—	17,637	17,637
(Fine) ...	Kilos. 200,081†	700,000	Kilos. 132,668¶	464,107	Kilos. 170,804	579,963
...	4	41	—	—	—	—
Total value ...	—	2,220,091	—	1,382,242‡	—	1,393,710*

\* *Min. Jour.*, Vol. LXXVII, No. 21, New York, p. 844.

† Estimated.

‡ Figures not available.

§ Exported.

¶ Figures not available.

Annual Report of the Director of the United States Mint for the Fiscal Year ended 30th June, 1903, Washington, 1903.



### Philippine Islands.\*

It has long been known that the mineral resources of these islands are very varied.

*Coal.*—Coal and lignite are found on many of the islands, and sufficient mining has already been done in the Danao and Compostela coal-fields of Cebú to prove the value of the deposits there. The thickness of the coal seams varies from a few inches to 18 feet.

*Copper.*—Copper ore occurs in many of the islands, but the most important deposits are those of Mancayan in Northern Luzon.

*Gold.*—Large quantities of gold have been extracted from alluvial deposits and quartz veins, and there appears to be a promising future for hydraulic and dredger mining in the Camarines, in Masbate, and in Mindanao, and for vein mining in Lepanto, Benguet, the Camarines, Masbate, and Mindanao.

*Iron.*—Magnetite and hæmatite are found in Abra Province, in San Miguel and Angat, in Boso-boso, Rizal and in the Camarines.

*Lead.*—The ore of this metal is found in Bontoc, Marinduque, the Camarines, Luzon, Cebú, and Panay.

*Manganese.*—Some rich manganese ore has been discovered in the island of Masbate.

*Petroleum and Natural Gas.*—Mineral oil exists in Cebú, Panay, Guimaras, Mindanao, and Leyte, and a considerable quantity is obtained by crude methods of working. Cebú has likewise natural gas.

*Quicksilver.*—According to the reports of prospectors, there are deposits of quicksilver on Leyte and Panay.

*Silver.*—The only silver found at present is either in the form of argentiferous galena or alloyed with the gold.

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### Porto Rico.†

The island of Porto Rico possesses valuable mineral resources, but owing to want of capital no *bona fide* mining is being carried on at present.

*Coal.*—Coal has been found in the western part of the island and at Guatemala.

*Copper.*—The ores of copper are found in several places.

*Gold.*—About 12 kilos. of gold, valued at from six to eight thousand dollars, are panned out annually from the beds of creeks and rivers.

*Gypsum.*—This mineral is common.

*Iron Ore.*—There are valuable deposits of iron ore, especially north of Juncos.

*Lignite and Peat.*—These two minerals occur in many places.

*Phosphate of Lime.*—Phosphate rock is everywhere abundant. It has been worked on the islet of Mona, in the San Domingo Channel, and about 9,000 tons were exported to Europe in 1894.

*Salt.*—Rich deposits of salt are known in several places.

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### Portugal.‡

According to a Consular report§ the South of Portugal is rich in minerals, particularly copper and iron, but, as most of the mines are situated a long distance from a railway and are unapproached by roads, very few are being worked. The official statistics omit all mention of the marble, slate, and other stone quarried in the country.

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\* Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII, 1899, p. 242—Rice "Mining in the Philippines," *Eng. Min. Jour.*, Vol. LXX., 1900, p. 400—and "Official Gazette," 4th May, 1904, Vol. II, No. 18, Manila, p.p. 334-340.

† Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII, 1899, p. 242.—"Zur Geologie der Insel Mona in West Indien," *Berg- und hüttenmännische Zeitung*, Vol. LVIII, 1892, p. 337.—Domerech "Porto Rico: her Mineral Resources," *Mines and Minerals*, Vol. XIX., 1899, p. 529, and Consul Churchward, "Trade of Porto Rico for the year 1902," *Dipl. and Cons. Reports*, No. 3027, Ann. Ser., 1903 [Cd. 1,386-104], p. 12.

‡ Official Return furnished by the Portuguese Government.

§ "Trade of South Portugal for the year 1903." *Dipl. and Cons. Reports*, No. 3,178, Ann. Ser., 1904 [Cd. 1,766-112].



## Portuguese East Africa.

Coal, gems, and gold are said to have been discovered in the district of Lourenço Marques,\* and coal on Inyack Island close to Delagoa Bay. Coal has also been found on the Catembe River, some 40 miles from Lourenço Marques, and much prospecting is going on. Coal of moderate quality abounds at Tete, which will prove of great value economically in the working of gold mines in the vicinity.†

In addition to large auriferous deposits, in connection with which many ancient workings can be distinctly traced, copper and coal are known to exist in the North of the Zambesi. Annexed to the report of Acting Vice-Consul Bowhill‡ is a map showing the localities of the gold, copper, and coalfields in Zambesia.

According to Consul Greville,§ the gold dredging industry in the Beira district is at present at a standstill for want of working capital.

The amount of gold actually produced in Portuguese East Africa at the present time is small. It is reported that the precious metal has been discovered in the southern portion of the Province of Angoche.

## PORTUGUESE NYASSALAND.||

Portuguese Nyassaland possesses large deposits of coal and the ores of iron, gold, and silver. The ores of copper, nickel, and zinc have been discovered, besides graphite, marble, mica, and slate.

*Coal.*—There are two known coalfields—one within a few miles of the natural harbour afforded by Pemba Bay, the other around Itule, on both sides of the Lugenda River.

*Iron.*—Magnetic ore occurs over a considerable area just west of the Pemba coalfield and is smelted on a small scale by the natives.

*Gold.*—The principal known gold region is the district about the Rarico River, a tributary of the Lugenda.

*Mica.*—This mineral is reported to exist in considerable quantities in the territories of the Nyassa Company.

## Prussia. (See GERMAN EMPIRE.)

## Roumania.¶

The minerals worked in Roumania are lignite, petroleum, rock salt, and stone.

*Lignite.*—Lignite is found in very many parts of the country, and the beds are sometimes as much as 20 feet thick; but lignite mining is at present in its infancy. The largest mines are at Margineanca, and are worked by the State; they produce about 51,000 tons yearly. Great hopes are based upon the utilization of lignite by making it into briquettes with petroleum residues; the fuel so produced is of excellent quality and is cheaper than Welsh coal.

*Petroleum.*—Petroleum is, and probably always will be, the mainstay of the mining industry in Roumania. The oil-bearing regions are shown on maps in the reports of M. Rommenh  ller and Mr. Sutherland.\*\* The illustrated pamphlet of the latter author affords an excellent account of the present state of the petroleum industry. The mineral is obtained partly from shallow hand-dug wells and partly from boreholes. The principal petroleum centres are Prahova, Bacan, Buzen and Dambovitza; over 80 per cent. of the wells are in the Prahova district. The official statistics†† show

\* *Zeitschr. f. prakt. Geol.*, 1899, p. 267. Despatch from H.M. Minister at Lisbon to Foreign Office. Consul Roas, "Trade of Louren   Marques and District for the year 1898." *Dipl. and Cons. Reports*, No. 2235, Ann. Ser., 1899 [C. 9044-61].

† Vice-Consul Wallis, "Report on the Trade of Tete and District for the year 1903." *Dipl. and Cons. Reports*, No. 3210, Ann. Ser., 1904 [Cd. 1766-144], pp. 4 and 5.

‡ "Trade of Chinde for the year 1903." *Dipl. and Cons. Reports*, No. 3211, Ann. Ser., 1904 [Cd. 1766-145].

§ "Trade of Beira for the year 1903." *Dipl. and Cons. Reports*, No. 3187, Ann. Ser., 1904 [Cd. 1766-121].

¶ Worsfold, "Portuguese Nyassaland," London, 1899. *Handbook of the Nyassa Company*, London, 1898, p. 30, and information furnished by The Nyassa Company.

¶ Alimanestiano, "L'Exploitation des Mines en Roumanie." *Courrier de Roumanie*, Nos. 4, 5, and 6; Bucharest, 1898-99; and "Der Bergbau Rum  nien," *Allgemeine bergm  nnische Zeitschrift*, No. 5, 1899, p. 16; *Le sous-sol de la Roumanie*, 1900 and Cr  mer, *R  ch  sse Min  rale de la Roumanie*, 1900.

\*\* Rommenh  ller, *La Roumanie*, Rotterdam, 1898, and "The Petroleum Industry of Roumania," reprinted from the *Petroleum Review*, April 1899.

†† *Statistica Industriei Miniere din tara (Afara de Cariere) de la 1 Iulie 1897—30 Iunie 1898*; Bucharest, 1899, p. 58; and Cr  mer, *Exposition Universelle de 1900, Paris. Notice sur l'Exploitation des P  troles Roumains pr  sent  e au Jury de la Classe 63*.



## ROUMANIA—continued.

that in 1898 there were 68 productive bore-holes and 882 productive wells. The deepest bore-hole is only 550 metres deep, whilst the wells are often only 20 to 100 metres deep. According to M. Alimanestiano, who is Chief of the Mining Department, the most pressing need of the petroleum industry is the establishment of a pipe-line from the wells to the Danube, or even to Costantza. Given cheap transport, Roumania could supply central Europe with oil at lower prices than any of its competitors. The bulk of the petroleum is refined, and the residue employed in Roumania for heating purposes. About 70 per cent. of the production is sent to other countries, mostly to Germany and Great Britain. In 1902 the total quantities of petroleum exported were—crude, 28,960 tons, valued £34,725, and refined, 39,812 tons, valued at £87,452.\*

*Salt.*—The country is blessed with rich deposits of salt, which extend for a distance of about 100 miles along the Carpathians. One bed of pure rock salt is from 800 to 1,000 feet thick.† The industry is a Government monopoly, and much of the work in the rock salt mines is carried on by convict labour. About 22,000 tons of rock salt are exported annually to Turkey and 3,000 to Russia.

*Stone.*—Roumania has hitherto been largely dependent upon the foreigner for stone and building materials generally, though ample supplies exist in the country itself, especially in the Dobrudja. However, the paving stones from Belgium and France have now been to some extent ousted by native products, in spite of the difficulties which beset the Roumanian quarry-owner in the shape of expensive transport and want of trained workmen. As these obstacles disappear, quarrying may be expected to become an important industry in the country.

There are five important granite quarries in the Dobrudja, and the total number of quarries in the country is shown by the official statistics‡ to be very considerable. There are a few marble quarries.

For centuries the alluvia of many of the rivers have been known to carry gold, and a little of the precious metal is occasionally washed from the sands by the peasantry; but the gold resources of Roumania are as yet unknown. The same may be said of the ores of cobalt, copper, lead, manganese, mercury, iron, and silver, and of the beds of anthracite and coal, which have been found cropping out in various parts of the country.

TABLE 486.

OUTPUT of MINERALS during the Years 1901, 1902, and 1903.§

Mineral	1901.		1902.	1903.
	Metric Tons.	Value.	Metric Tons.	Metric Tons.
		Lei.		
Lignite ... ..	105,000	788,000	—	—
Petroleum (crude) ... ..	320,000	10,500,000	310,000	384,303
Salt .. ...	90,000	(Monopoly.)	—	—
Stone ... ..	980,000	830,000	—	—
Total value in Lei ... ..	—	12,118,000	—	—
„ „ £ Sterling ... ..	—	£484,720	—	—

\* Vice-Consul Dundas "Trade of Roumania for the year 1903," *Dipl. and Cons. Reports* No. 3204, Ann. Ser. 1904, [Cd. 1766-138].

† Crémier, *Exposition Universelle de 1900, Paris. Notice sur l'Exploitation du Gisement de sel gemme de la Roumanie présentée au Jury de la Classe 63.*

‡ *Statistica Carierelor din țara*, 1897; Bucharest, 1898.

§ Official Return furnished by the Département de l'Agriculture, du Commerce, de l'Industrie et des Domaines," Bucharest. Complete figures for 1902 and 1903 not yet received.

|| Excluding value of salt.



## RUSSIA—continued.

is estimated to contain at least a hundred million tons of workable ore. The ore, as exported, contains about 50 per cent. of metallic manganese, 6 to 9 per cent. of silica, and 0.12 to 0.17 per cent. of phosphorus. The former district produced 402,311 tons of Manganese ore in 1902.\*

*Peat.*—Though peat may appear an unimportant fuel compared with coal, it nevertheless is so abundant and is so easily obtained in certain localities far removed from railways that it deserves special attention. In Russia there is an office under the Ministry of Agriculture and Domains (*Bureau de l'Industrie des Tourbes*) which supervises the peat industry. Many of the turbaries have been carefully tested by borings, and an official map exhibited at the Paris Exhibition gave information about 113 turbaries, occupying an area of 398 sq. miles (103,000 hectares); several are from 19 to 38 sq. miles (5,000 to 10,000 hectares) in area and over.

The Rojsjo Peat Works are manufacturing compressed peat in Finland.†

*Petroleum.*\*—The production of the oil wells near Baku in 1903 shows a decrease compared with the previous year, the total output being 596,581,155 poods (9,771,999 metric tons) of crude oil in 1903 against 636,528,852 poods (10,426,343 metric tons) in 1902. The Sabounchi field was again the most productive of the five oil-fields near Baku. In the five districts there were on an average 1,455 producing wells at work in 1903 and 1,402 in 1902. The average depth of the producing wells in 1903 was 693 feet on the Balakhany field, 994 on the Sabounchi, 1,456 on the Romany, 1,589 on the Bibi-Eibat, and 490 on the Binagadi. Of the total 596½ million poods obtained in the Baku fields, only 53½ million were derived from wells in which the oil rose to the surface; the remainder had to be drawn up mechanically.

Russia's wealth in petroleum is not confined to the Baku district, wells at Grozny are yielding large quantities of oil, and great hopes are based upon the new oil field near the river Uchta‡ on the boundary of the provinces of Archangel and Wologda.

*Platinum.*—All the platinum is obtained from alluvial deposits in the Urals; the output in 1902 was 196,923 ozs.§ and in 1903 192,711 ozs. Russia produces about 96 per cent. of the world's supply of this metal.

*Quicksilver.*—All the quicksilver is obtained in the district of Ekaterinoslav, in South Russia; the deposits were first worked in 1885.

*Salt.*—In 1902 more than half the salt produced in Russia was from lakes, especially in the Crimea and the adjacent provinces, and in Astrakhan. Salt is likewise obtained by evaporating brine pumped up from boreholes, and by mining beds of rock-salt. The quantity of rock and boiled salt produced from the mines near Slaviansk and Bachmut in the Ekaterinoslav district was 513,340 tons in 1903.||

In Western Siberia salt is obtained from a number of lakes which partially dry up in summer and in hot years deposit crusts of salt from two to four inches thick. The great Burlinsk Lake yields 20,000 tons yearly in this fashion.¶

In Eastern Siberia the salt is obtained from springs, and from deposits of rock salt.¶

*Sulphate of sodium.*—Nearly 54 per cent. of the output in 1902 came from the Government of Tomsk; the great Marmischanski Lake is estimated to contain more than a million tons of sulphate of sodium; about 1,600 tons are obtained from it annually, and some of it is used for making soda.¶

*Sulphur.*\*\*—Native sulphur occurs in various parts of the Empire; it is worked in Daghestan and at Czarkowsky, in the Government of Kielce, near the Austrian frontier.

*Zinc ore.*\*\*—The zinc ore is obtained from deposits of calamine in Poland. The smelting works obtained 8,409 tons in 1902 and 10,067 tons in 1903.

\* Consul Stevens, "Trade of Consular District of Batoum for the year 1902." *Dipl. and Cons. Reports*, No. 2979, Ann. Ser. 1903 [Cd. 1386-56].

† Consul Cooke. *Op. cit.* No. 3278, p. 12.

‡ B. von Vangel, "Petroleum in the Uchta District." *Boring & Drilling*, Vol. II., 1901, p. 89.

§ Consul Wardrop. *Op. cit.* No. 3253, p. 12.

|| Consul Brophy. *Op. cit.* No. 3173, p. 28.

¶ Thiess, "Die Salzgewinnung in Siberien." *Zeitschr. B. H. Salinenwesen*, Vol. XLVI., 1898, p. 249.

\*\* Consul-General Murray, "Trade of Warsaw and District for the year 1897." *Dipl. and Cons. Reports*, No. 2135, Ann. Ser., 1898 [C. 8648-157], and "Trade and Agriculture of Poland and Lithuania for the year 1903." *Dipl. and Cons. Reports* No. 3142, Ann. Ser., 1904 [Cd. 1766-76].

RUSSIA—continued.

TABLE 487.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1901 and 1902.\*

Kind of Mineral working.	Persons Employed during the Year.	
	1901.	1902.
Asbestos ... ..	1,089	1,380
Asphalt ... ..	629	424
China clay ... ..	63	449
Coal ... ..	118,685	105,688
Cobalt, chrome, iron, &c. ... ..	1,207	1,317
Copper ore ... ..	6,351	6,729
Fire clay ... ..	6,272	8,380
Gold ... ..	86,720	86,770
Iron ore ... ..	46,381	38,603
Manganese ... ..	3,715	3,123
Naphtha ... ..	30,792	24,560
Phosphorite ... ..	576	304
Platinum ... ..	2,025	1,803
Quicksilver ... ..	723	899
Salt ... ..	15,957	21,957
Sulphur ... ..	203	166
Silver-lead ore ... ..	1,739	1,525
Stone Quarries ... ..	43,621	38,944
Zinc ore ... ..	1,399	1,224
Total ... ..	368,147	344,245

TABLE 488.

PERSONS EMPLOYED at GOLD MINES during the Years 1901 and 1902.\*

Year.	Number of Persons Employed.				
	Urals.	West Siberia.	East Siberia.	Finland.	Total.
1901 ... ..	37,021	12,710	36,960	29	86,720
1902 ... ..	39,086	10,429	37,200	55	86,770

TABLE 489.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.\*

Mineral.	District whence Obtained.	1901.		1902.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	£	Metric Tons.	£
Asbestos .. ..	Ural .. ..	4,399	41,820	4,507	43,066
Asphalt and mineral pitch.	Syzran, Caucasus .. ..	26,622	51,521	12,360	24,038
China clay .. ..	Ekatérinoslav, Volyn, Chernigov, Kieff, Cherson .. ..	17,395	20,631	20,231	24,345
Chrome ore .. ..	Perm, Orenburg .. ..	22,169	14,235	19,655	12,685
Coal { Anthracite Coal .. Lignite ..	Donetz, Poland, Moscow, Ural, Kieff, Turkestan, Tomsk, Caucasus, Kirghiz Steppe, Saghalien, Eastern Siberia. }	16,526,636	6,664,422	16,465,836	5,837,632

\* Collection of Statistical Information respecting the Mining and Metallurgical Industries of Russia for the year 1902, St. Petersburg, 1905. Later figures, except those relating to output of gold, iron, petroleum, platinum and zinc (see Table 490) are not available.



RUSSIA—continued.

TABLE 489—continued.

QUANTITY and VALUE of MINERALS produced during the Year 1901 and 1902—  
continued.

Mineral.	District whence Obtained.	1901.		1902.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	£	Metric Tons.	£
Cobalt ore and regulus	Caucasus .. .. .	216	(Not stated.)	—	—
Copper .. .. .	Ural, Kirghiz Steppe, Olonets, Western Siberia, Turkestan, Caucasus, Finland.	8,467	770,851	8,517	754,908
Gold .. .. .	Ural, Eastern and Western Siberia, Finland .. .. .	Kil. 39,140	4,651,682	Kil. 34,857	4,163,376
Iron (pig).. .. .	Ural, Central Russia, Poland, Southern Russia, Northern Russia, Siberia, Finland.	2,866,776	11,146,823	2,568,165	9,044,185
Iron pyrites .. .. .	Ural, Toula, Novgorod .. .. .	30,732	22,683	26,465	19,600
Lead .. .. .	Tomak, Transbaikai, Kirghiz Steppe, Caucasus, Turkestan	156	1,925	235	2,401
Manganese ore .. .. .	Kutais, Ural, Ekaterinoslav .. .. .	522,395	147,292	536,518	155,800
Petroleum .. .. .	Caucasus, Transcaaspian, Turkestan .. .. .	11,510,600	6,062,104	11,110,318	4,854,337
Phosphorite .. .. .	Bessarabia, Kostroma, Podolia, Smolensk .. .. .	21,276	14,940	13,709	10,000
Platinum .. .. .	Ural .. .. .	Kil. 6,355	623,721	Kil. 6,128	502,754
Quicksilver .. .. .	Ekaterinoslav .. .. .	383	100,842	416	59,123
Salt { Rock salt Lake salt Salt from brine }	Astrakhan, Perm, Ekaterinoslav, Crimea, Kharkov, Orenburg, Tomak, Caucasus, &c.	1,705,922	739,069	1,847,019	801,203
Silver .. .. .	Tomak, Transbaikai, Kirghiz Steppe, Caucasus, Finland ..	Kil. 1,097	4,383	Kil. 1,196	4,349
Sulphate of sodium .. .. .	Tiflis, Kuban, Tomak, Vologda .. .. .	6,959	4,061	4,420	3,118
Sulphur .. .. .	Daghestan, Poland, Turkestan .. .. .	2,489	14,362	1,800	11,030
Tin .. .. .	Finland .. .. .	—	—	8	1,065
Zinc .. .. .	Poland .. .. .	6,104	122,568	8,264	265,663
	Total Value .. .. .	—	31,219,966*	—	26,569,138

The value of the output from quarries in the years 1901 and 1902 is given in the Russian Statistical Volume as 3,880,301 roubles (£408,240) and 5,041,906 roubles (£532,971) respectively, but these figures are really too low, as they do not include the produce of quarries in the St. Petersburg Olonetz district and in South-Eastern Russia.

TABLE 490.

QUANTITIES of certain MINERALS obtained during the years 1903.†

Mineral.	1903.
Gold ... .. .	35,271 Kilos.
Iron (pig) ... .. .	2,443,594 Metric Tons.
Petroleum ... .. .	9,771,999 "
Platinum ... .. .	5,994 Kilos.
Zinc ... .. .	10,229 Metric Tons.

\* Excluding value of cobalt ore and regulus.  
† Information obtained from Consular Reports

RUSSIA—continued.

TABLE 491.

DEATHS from ACCIDENTS at the MINES and other WORKINGS-for MINERALS during the Years 1901 and 1902.\*

Kind of Mines and Workings.	Number of Persons Killed.		Death-rate per 1,000 Persons Employed.	
	1901.	1902.	1901.	1902.
Mines... ..	327	267	2·76	2·53
and Platinum ... ..	35	55	·39	·62
of Mines and Workings ... ..	103	71	·88	·64
ries ... ..	49	36	1·12	·92
Total ... ..	514	429	1·40	1·25

Saba. (See DUTCH WEST INDIES.)

Sahara.†

There are three important salt deposits in the Sahara, all of which are due to the natural evaporation of salt lakes, viz., the Sebka d'Idgil, which supplies Western Africa ; Taodeni bed, which furnishes salt to the Sahel, the Niger district, and the Congo ; lastly, the Sebka de Bilma, which sends its produce to the east and the region of Tchad.

Sandwich Islands.‡

The mineral industries of the Sandwich Islands are of slight importance. There are large deposits of gypsum, and red and yellow ochre ; sulphur is found around the volcanoes.

The extraction of salt from sea water is carried on to supply local wants.

Saxony. (See GERMAN EMPIRE.)

St. Martin. (See DUTCH WEST INDIES.)

\* Collection of Statistical Information respecting the Mining and Metallurgical Industries of Russia for the year 1902. St. Petersburg, 1905. Later figures are not available.  
† Pasteur, "Le Sel," *Revue des Deux Mondes*, Vol. LXXI, 1901, p. 219.  
‡ Say, "Mineral Resources of the Antilles, Hawaii, and the Philippines." *Eng. Mag.*, Vol. XVII, 1899, p. 242.

Senegal.\*

Alluvial deposits of gold exist in various parts of Senegal, and especially in the valley of the Falemé river, where the metal is extracted on a small scale by the natives. In 1903, the value of the gold exported was £22,803.

Servia.†

According to an official map Servia is richly endowed with mineral wealth ; but until railways have been constructed and the existing cart roads improved it is idle to expect that it will become a great mining country. It possesses deposits of the ores of antimony, arsenic, chromium, copper, gold, iron, lead and mercury, besides coal, graphite, gypsum, magnesite, sulphur, marble and other stones for ornamental and building purposes.

*Coal.*—Most of the coal region lies near the Danube, which enables the mineral to be shipped down the river to districts requiring fuel and to the Black Sea. The most important workings are at Dobra, on the Danube. The coal is of Liassic Age.

True coal, said to be almost as good as English coal, occurs and is worked in the Timok Valley, near Tschuka. In the Boljevac district a coal basin extending over a large area has recently been discovered.

Vice-Consul Thesiger states‡ that Servia is rich in mines of brown coal which might be worked to a much larger extent than at present. Thick beds of Tertiary lignite occur at Senje, Sisovac, Jelasnica, and in many other parts of the country.

*Copper and Iron.*—The ores of these two metals have been worked in the neighbourhood of Maidanpek. At Bor to the south of Maidanpek copper ore has been discovered in several quartz veins in a mass of andesite.§

*Gold.*—This was worked in Servia by the Romans, and then many centuries later by the Austrians. Turkish invasions put a stop to mining, but now there are signs of a revival and extension of the industry. The gold is found in alluvial gravel and in quartz veins, especially in the district west of the River Timok, which forms the frontier of Bulgaria. Near Glogovica there are many veins of gold-bearing pyrites.

Gold-dredging operations on the River Pek have now been started.

TABLE 492.

PERSONS EMPLOYED at MINES during the Years 1902 and 1903.

	Year.						Under and Above-ground.
	1902	...	...	...	...	...	
	1902	...	...	...	...	...	2,229
	1903	...	...	...	...	...	2,316

In addition to the above, there were about 120 persons employed at quarries.

\* Consul Cromie, "Trade of Senegal for the year 1903." *Dipl. and Cons. Reports*, No. 3312, Ann. Ser., 1904 [Cd. 2236-56].  
† Official return furnished by the Mining Department of the Ministry of Agriculture, Commerce and Industry, Belgrade;  
Consul Macdonald, "Trade of Servia for the years 1897-98." *Dipl. and Cons. Reports*, No. 2207, Ann. Ser., 1899 [C 9044-33];  
Antula, *Revue générale des gisements métallifères en Serbie*. Paris, 1900; and Jastrow, "The Mining Industries of Servia".  
*Eng. Min. Jour.*, Vol. LXX., 1900, p. 523.  
‡ "Trade of Servia for the year 1902 and first nine months of 1903." *Dipl. and Cons. Reports*, No. 3139, Ann. Ser., 1904 [Cd. 1766-73], p. 14.  
§ Antula, *Les gisements de cuivre dans les environs de Bor et de Krivclj*, Belgrade, 1904.



SERVIA—continued.

TABLE 493.

QUANTITY and VALUE of MINERALS produced during the Years 1902 and 1903.

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony (regulus) ... ..	312	220,166	279	} 206,280
" (oxide)... ..	25	9,224	65	
Bismuth ore ... ..	50	35,000	—	—
Brown coal ... ..	89,254	680,131	92,568	898,783
Cement ... ..	2,096	56,760	(a)	—
Coal... ..	35,888	574,211	40,962	674,289
Copper (metal) ... ..	140	109,150	192	289,026
" ore... ..	2,520	54,566	—	—
Gold (fine)... ..	Kilos. 19	56,977	Kilos. 11	34,802
" concentrate ... ..	311	15,961	(a)	—
" ore ... ..	1,496	20,000	(a)	—
Lead ... ..	6	1,183	82	25,118
Lead and zinc ore... ..	57	3,450	(a)	—
Lignite ... ..	28,612	163,419	26,298	132,057
Magnesite ... ..	250	5,000	(a)	—
Millstones ... ..	353,860	28,309	(a)	—
Silver (metal) ... ..	Kilos. 20·7	1,802	(a)	—
Total value in francs ... ..	—	2,035,309	—	2,260,355 (b)
" " £ sterling ... ..	—	£81,412	—	£90,414

(a) Not stated. (b) Incomplete.

TABLE 494.

DEATHS from ACCIDENTS at MINES during the Years 1902 and 1903.

	Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
	1902 ... ..	1	·45
	1903 ... ..	2	·86

Siam.\*

Mining in Siam is, at the present time, practically confined to tin, gems (sapphires and rubies) and gold, although several other minerals exist and have been worked in the country.

Coal.—No true coal is known to occur in Siam. Lignite or brown coal is found at Bandon, Gerbi, Plien, Trang, in the Malay Peninsula.

Copper.—The chief deposits are situated at Chan Tuk.

Gold.—The precious metal is very widely distributed. Alluvial gold is worked principally in Pu Kiriu, Bangtaphan, Kow Suplu and Tomoh districts. Reef mining is carried on by Chinese in the latter district.

Gems.—The chief ruby workings are in Chantaboon and Kratt, but the sapphires are nearly all obtained from the Phalin district in Battombong. Most of the work, which consists of digging small pits in the neighbourhood of streams and washing the

\* Information furnished by the Royal Department of Mines and Geology, Bangkok.

## SIAM—continued.

gem-bearing earth by hand, is carried on by Burmese and Shans, who, however, employ a considerable number of Laos as labourers. The value of the output of gems is estimated to be about £300,000 annually.

*Iron.*—In ancient times there was a considerable amount of iron mining, but now there are only a few places where it is carried on, and the industry is on quite a small scale.

*Lead.*—So far as it is known veins of argentiferous galena have been worked only in the Malay State of Jalar.

*Petroleum.*—A small quantity of petroleum is found in Muang Fang; the oil is obtained by skimming the water which collects in shallow pits dug for the purpose.

*Tin.*—This is the only metal of any importance in Siam. The mines of the State are chiefly situated in the Siamese Malay Provinces, along the edge of the granites of the main ridge which forms the watershed of the peninsula. Tin is also found in small quantities in the valley of the Nam Sak river and in Northern Siam. Puket Island, on the West Coast, is the principal tin-mining centre at present.

TABLE 495.

APPROXIMATE NUMBER of PERSONS employed at MINES and MINERAL WORKINGS during the Year 1903.

Kind of Workings.	Underground.	Above Ground.	Total.
Gold Mines .. ...	300	800	1,100
Iron ore workings ... ..	—	50	50
Other workings ... ..	—	25,100	25,100
Total ... ..	300	25,950	26,250

TABLE 496.

APPROXIMATE QUANTITY of MINERAL obtained during the Year 1903.

Mineral.	Quantity.
Gold (Fine) .. ...	78 Kilos.
Tin ore ... ..	5,000 Metric Tons

No statistics of accidents at mines and mineral workings are obtainable.

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Singkep. (See DUTCH EAST INDIES.)

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Soudan. (See EGYPT, AND SAHARA.)

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## Spain.\*

Spain is justly celebrated for its mineral wealth. It produces more cupreous pyrites than any other country in the world, and very large amounts of lead ore and quicksilver; its iron ores are abundant and of excellent quality, and it has of recent years become an important supplier of manganese ores.

The total number of persons employed in and about mines in Spain during the year 1903 was 94,351.

*Coal.*—Eight provinces produced coal in 1903. The total output is over two-and-a-half million tons, more than half coming from the province of Oviedo. Anthracite is worked on a small scale in the provinces of Cordova and Palencia and lignite in ten provinces; but the total output is insignificant.

*Copper.*—The Rio Tinto mines and its neighbours show no signs of impoverishment, for the output of the province of Huelva was 2,757,122 tons. Compared with this figure, the production of the other copper-bearing provinces, such as Seville, &c., is small.

*Gold.*—Mines are being worked in the province of Corunna.

*Iron Ore.*—The province of Biscay, which includes the Bilbao district, is the great stronghold of the iron industry in Spain; most of the workings are open quarries, and the ores worked are red and brown haematite and siderite. The total output of the province in 1903 was 4,854,708 tons, which is a decrease of 204,697 tons compared with the previous year. More than half this quantity was exported to the United Kingdom.

Next in importance after Biscay comes the province of Santander with an output of 1,171,965 tons.

*Lead.*—Most of the lead comes from the provinces of Almeria, Badajos, Ciudad Real, Cordova, Jaen, Murcia, and Tarragona; much of the ore, and especially that of Murcia, contains a notable amount of silver.

*Manganese Ore.*—Mining for manganese is almost entirely confined to the province of Huelva. The output of the province in 1903 was 26,194 tons, or only a little more than half of the quantity obtained in 1902.

*Quicksilver.*—From time immemorial the Almaden mine, in the province of Ciudad Real, has been renowned as a producer of cinnabar. The other quicksilver mines are of comparatively little importance; several are worked in the province of Oviedo.

*Salt.*—Much of the salt is obtained from sea water, especially in the provinces of Cadiz and Alicante.

*Sulphur.*—In addition to the sulphur contained in cupreous iron pyrites, Spain has mines of native sulphur in the provinces of Albacete, Almeria, Murcia and Biscay.

*Tin Ore and Wolfram.*—These two minerals occur together in the provinces of Pontevedra and Corunna, and tin ore in the province of Caceres.

*Zinc.*—Murcia still retains its position as the principal zinc-producing province, Santander taking the second place. The two provinces between them produce nearly nine-tenths of the country's total.

TABLE 497.

PERSONS EMPLOYED at MINES during the Years 1902† and 1903.‡

Year.				Men.	Women.	Boys.	Total.
1902	...	...	...	81,279	2,695	3,534	87,508
1903	...	...	...	88,244	2,779	3,341	94,364



SPAIN—continued.

TABLE 498.  
PERSONS EMPLOYED in the PRINCIPAL MINING INDUSTRIES during the Years 1902\* and 1903.†

Kind of Mines.	1902.				1903.			
	Men.	Women.	Boys.	Total.	Men.	Women.	Boys.	Total.
Brown coal ... ..	969	25	11	1,005	1,058	36	19	1,113
Coal and anthracite ...	20,636	1,265	434	22,335	19,955	1,227	474	21,656
Copper ore and cupreous pyrites.	9,975	230	901	11,106	11,591	268	282	12,141
Iron ore ... ..	26,763	344	714	27,821	28,739	126	1,208	30,073
Lead ore ... ..	16,813	439	854	18,106	18,651	633	834	20,118
Quicksilver ore ... ..	1,036	1	386	1,423	1,663	—	81	1,744
Zinc ore ... ..	2,057	163	86	2,306	2,554	234	183	2,971
Other mines ... ..	3,030	228	148	3,406	4,033	255	260	4,548
Total ... ..	81,279	2,695	3,534	87,508	88,244	2,779	3,341	94,364

TABLE 499.  
QUANTITY and VALUE of MINERALS produced during the Years 1902\* and 1903.†

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Pesetas.	Metric Tons.	Pesetas.
Aluminium phosphate ... ..	40	800	—	—
Aluminous earths ... ..	337	8,425	381	11,314
Amblygonite ... ..	‡	—	17	516
Anthracite ... ..	109,298	1,116,015	108,959	1,216,720
Antimony ore ... ..	67	5,025	42	3,008
Arsenical pyrites ... ..	5,648	27,340	7,996	39,980
Asphalt (rock) ... ..	6,301	63,363	6,277	62,770
Barium sulphate ... ..	642	12,319	507	5,310
Bismuth... ..	—	—	Kilos 2,500	1,250
Bituminous shale ... ..	—	—	360	4,375
Brown coal ... ..	84,242	396,841	104,232	592,831
China clay ... ..	3,412	32,074	2,578	13,672
Clay ... ..	295	3,362	640	4,020
Coal ... ..	2,614,010	26,040,194	2,587,652	23,640,360
Copper ore ... ..	878	62,394	3,056	284,633

\* Estadística Minera de España correspondiente al año 1902, Madrid, p. 28.  
† 1903, " p. 27.  
‡ Quantity inserted under the head of "aluminium" phosphate in the Spanish Statistics.

## SPAIN—continued.

QUANTITY and VALUE of MINERALS produced during the Years 1902 and 1903—  
continued.

Mineral.	1902.		1903.	
	Quantity	Value.	Quantity.	Value.
	Metric Tons.	Pesetas.	Metric Tons.	Pesetas.
Cupreous iron pyrites... ..	2,617,776	44,443,506	2,796,733	52,027,667
Fluor spar ... ..	93	1,753	4,000	40,000
Garnet ... ..	—	—	185	3,700
Gold ore... ..	1,764	52,920	2,681	92,025
Graphite ... ..	20	180	—	—
Iron ore... ..	7,904,555	39,945,963	8,304,153	43,380,242
Iron pyrites ... ..	145,173	593,492	155,739	692,690
Jet ... ..	5	540	kilos. 1,500	219
Lead ore... ..	100,403	12,676,333	108,660	12,119,469
Lead ore, argentiferous ... ..	227,645	29,120,861	179,858	29,893,553
Magnesium carbonate ... ..	100	300	2,260	6,900
Manganese ore ... ..	46,069	769,766	26,194	458,389
Mineral waters... ..	27,964,925	874,209	21,791,346	816,756
Phosphorite ... ..	1,150	23,000	1,124	30,920
Pumice stone ... ..	—	—	30	300
Quicksilver ore... ..	26,037	4,303,066	30,370	4,716,317
Salt ... ..	426,434	3,537,121	427,394	3,472,782
Silver ore ... ..	175	127,152	231	289,540
Silver ore, ferruginous ... ..	24,361	151,036	90,996	333,047
Sodium sulphate ... ..	725	3,200	24	1,127
Steatite ... ..	542	15,269	3,725	11,175
Sulphur rock ... ..	15,442	200,705	38,573	214,191
Tin ore (dressed) ... ..	12,762	803,500	330	165,000
Topaz ... ..	—	—	kilog. 90	8,749
Tungsten ore (Wolfram) ... ..	11	6,666	—	—
Vanadium ... ..	40	12,000	181	67,694
Zinc ore ... ..	127,618	4,474,958	154,126	5,234,831
Total values in Pesetas ... ..	—	169,905,648	—	179,958,042
„ „ „ £ sterling ... ..	—	£6,796,226	—	£7,198,322

SPAIN—continued.

TABLE 500.

DEATHS from ACCIDENTS at MINES during the Years 1902\* and 1903.†

Year.	Number of Deaths by Accidents.	Number of Persons seriously Injured.	Death-rate per 1,000 Persons Employed.
1902..   ...   ...   ...   ...	255	310	2·91
1903...   ...   ...   ...   ...	240	271	2·54

TABLE 501.

DEATHS from ACCIDENTS at MINES, classified according to CAUSE, during the Years  
1902 and 1903.‡

Cause.	1902.		1903.	
	Number of Deaths by Accidents.	Percentage of Total.	Number of Deaths by Accidents.	Percentage of Total.
Falls of ground   ...   ...   ...   ...	58	22·7	59	24·5
Explosions of firedamp   ...   ...   ...   ...	4	1·6	15	6·2
Blasting   ...   ...   ...   ...   ...	31	12·2	21	8·8
Suffocation by gases   ...   ...   ...   ...	15	5·9	4	1·7
Irruptions of water   ...   ...   ...   ...	2	0·8	4	1·7
Falling down shafts   ...   ...   ...   ...	30	11·7	37	15·4
Breaking of machinery, &c.   ...   ...   ...	42	16·5	22	9·2
Miscellaneous   ...   ...   ...   ...   ...	73	28·6	78	32·5
Total   ...   ...   ...	255	100·0	240	100·0

Spanish Possessions. (See CANARY ISLANDS.)

Spitzbergen.§

Coal has been discovered in several places in Spitzbergen. Bear Island is said to possess workable seams of excellent coal.

Sumatra. (See DUTCH EAST INDIES.)

Surinam. (See DUTCH GUIANA.)

\* *Estadística Minera de España correspondiente al año 1902*, Madrid, pp. 30 and 31.  
†   "       "       "       "       "       1903,   "   pp. 30, 32 and 33.  
‡   "       "       "       "       "       1902,   "   pp. 30 and 31, and *ibid.* 1903, Madrid, pp. 32 and 33.  
§ *B. u. h. Zeitung.* Vol. LIX., 1900, p. 476.



## Sweden.\*

**Coal.**—All the Swedish collieries are in Scania, the most southerly province of the kingdom. The seams, which are of Rhætic Age, are interstratified with beds of clay, and the two minerals are worked together.† The thickness of the coal seams, including the partings of shale, varies from three to five feet.

**Copper.**—The well-known Stora Kopparberg mine close to Falun furnishes much of the copper of Sweden, some of the silver, and nearly all of the gold.

**Iron ore.**—Sweden has long been famous as an iron-producing country, and its reputation is due partly to the excellence of its ores and partly to the fact that charcoal is employed almost exclusively as the fuel for the blast furnaces. Sweden likewise exports much iron ore, but there appears to be a likelihood in the future of Gellivare ores of a low percentage of metal being treated within the country by a process known as the *röndahl* method." Of the total output of 3,677,520 tons in 1903, the big workings at Gellivare and Kirunavara in Lapland furnished more than 52 per cent. The Kirunavara workings shipped 961,457 tons from Narvik on the Ofoten Fjord in Norway; 577,360 tons of this quantity were destined for Germany, and 146,757 tons for the United Kingdom.‡ The province of Kopparberg with its numerous mines, which produced nearly a million tons of ore in 1903, comes next in importance to Lapland.

**Peat.**—The table of production takes no account of either the peat diggings or of the peat quarries. Peat is largely dug for use as household fuel, and for making peat-litter and peat-mould.

**Stone.**—Granite, using the word in its commercial sense, is quarried on the West Coast of Sweden, and also on the Baltic, and forms an important article of export. Porphyry and marble are also products of Sweden.

**Zinc.**—The Ämmeberg mines supply most of the zinc ore, which is exclusively exported.

TABLE 502.

PERSONS EMPLOYED at various MINES and FELDSPAR QUARRIES during the Years 1902 and 1903.

Year.	Kind of Workings.	Under-ground.			Above-ground.			Totals.
		Men.	Young Persons under 18.	Total.	Men.	Women and Young Persons under 18.	Total.	
1902	Coal mines ... ..	1,490	157	1,647	472	60	532	2,179
	Iron „ ... ..	4,339	155	4,494	4,780	1,222	6,002	10,496
	Other „ ... ..	885	—	885	602	246	848	1,733
	Feldspar quarries ...	61	—	61	129	56	185	246
	Total for 1902 ...	6,775	312	7,087	5,983	1,584	7,567	14,654
1903	Coal mines ... ..	1,526	161	1,687	469	48	517	2,204
	Iron „ ... ..	4,193	128	4,321	4,826	983	5,809	10,130
	Other „ ... ..	921	1	922	643	278	921	1,843
	Feldspar quarries ...	74	—	74	104	67	171	245
	Total for 1903 ...	6,714	290	7,004	6,042	1,376	7,418	14,422

\* *Bidrag till Sveriges Officiella Statistik för år 1903*, Stockholm, 1904.

† Nordenström, *L'industrie minière de la Suède*, Stockholm, 1897.

‡ Consul MacGregor, "Trade of Stockholm and Eastern Coast of Sweden" for the year 1903. *Dipl. and Cons. Reports*, 1903, Ann. Ser., 1904 [Cd. 1766-127], pp. 6 and 15.

SWEDEN—continued.

TABLE 503.

QUANTITY of MINERALS obtained from MINES and FELDSPAR QUARRIES during the Years 1902 and 1903.

Mineral.	Year.			
	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum ... ..	132	12,526	140	12,755
Apatite ... ..	3,895	58,429	3,219	32,191
Coal ... ..	304,733	2,511,228	320,390	2,530,337
Copper ore ... ..	30,095	320,841	36,687	331,725
Copper, sulphate ... ..	1,257	395,882	1,171	392,256
Feldspar ... ..	17,960	175,897	19,392	218,944
Fire-clay... ..	161,312	285,972	172,718	328,759
Graphite (raw and dressed) ... ..	63	9,500	25	3,685
Iron ore ... ..	2,896,616	14,368,806	3,677,841	16,626,381
Iron pyrites ... ..	—	—	7,793	46,000
Iron, sulphate ... ..	127	7,600	62	3,444
Manganese ore ... ..	2,850	54,959	2,244	36,550
Manganese ore in powder ... ..	487	22,000	332	13,200
Silver and lead ore ... ..	9,378	165,688	9,792	191,005
Sulphur ... ..	74	7,400	—	—
Zinc ore ... ..	48,783	1,712,169	62,927	2,233,681
Zinc ore (calcined) ... ..	27,564	1,543,584	30,429	1,900,925
Zinc, sulphate ... ..	51	3,580	79	4,750
Total value in crowns... ..	—	21,656,061	—	24,906,588
"    "    £ sterling ... ..	—	£1,189,892	—	£1,368,494

TABLE 504.

PERSONS KILLED and INJURED by ACCIDENTS at MINES and FELDSPAR QUARRIES during the Years 1902 and 1903.

Year.		Number of Persons Killed.	Number of Persons Injured.*	Death-rate per 1,000 Persons Employed.
1902	... ..	16	460	1·09
1903	... ..	25	457	1·73

Switzerland.†

That the mineral industries of Switzerland are of little importance is evident from the following tables ; nevertheless the kinds of mineral which are being obtained from underground workings are numerous, viz.: anthracite, bituminous limestone, brown coal, fireclay, gypsum, iron ore, limestone, magnesium sulphate, marble, marl, potstone, salt, sandstone, and slate.

\* Injuries causing absence from work for 14 days at least.  
† *Rapports des Inspecteurs Fédéraux des Fabriques et des Mines dans les années 1902 et 1903, Aarau, 1904 : and Notiz sur les exploitations minérales de la Suisse, Geneva, 1896.*

SWITZERLAND—continued.

*Anthracite.*—Two mines, Chandoline and Granges, produce annually 1,500 to 2,000 tons of anthracite containing a high percentage of ash.

*Bituminous limestone.*—The asphalt rock of the Val de Travers, which is exported from Switzerland to various countries, is a bituminous limestone of Cretaceous age. The bed is 4 to 8 m. thick, and contains about 10 per cent. of bitumen.

*Brown coal and cement.*—With reference to the Swiss brown coal, which is of Miocene age, it is interesting to learn that seams of only 4 to 6 inches in thickness were worked for many decades near the towns of Zurich and Lausanne, and probably with profit. Nowadays the beds immediately underlying and overlying the coal are worked with it, and are used for making Roman cement, Portland cement, bricks, and manure.

*Iron.*—The only workings for iron are at Delsberg.

*Salt.*—Switzerland possesses five workings for salt, viz., Bex salt mine in the Rhone valley; the brine wells of Rheinfelden, Ryburg, and Kaiseraugst, in the Canton Aargau; and the brine well Schweizerhalle in the Canton Baselland. The output for 1902 was 50,990 tons.

TABLE 505.

NUMBER of PERSONS EMPLOYED at MINES and UNDERGROUND QUARRIES during the Years ended 31st March, 1902 and 1903.

Kind of Workings.	1902.		1903.	
	Number of Works.	Number of Persons Employed.	Number of Works.	Number of Persons Employed.
Mines ... ..	15	432	16	448
Underground quarries ...	93	1,239	93	1,239
Total ... ..	108	1,671	109	1,687

TABLE 506.

NUMBER of WORKINGS and PERSONS EMPLOYED, classified according to MINERAL worked during the Year ended 31st March, 1903.

Kind of Mineral.	Number of Workings.		Number of Persons Employed.	
	True Mines.	Underground Quarries.	True Mines.	Underground Quarries.
Anthracite ... ..	4	—	49	—
Asphalt ... ..	2	—	103	—
Brown coal ... ..	4	—	29	—
Brown coal and cement stone ... ..				



SWITZERLAND—continued.

NUMBER of WORKINGS and PERSONS EMPLOYED, classified according to MINERAL worked during the Year ended 31st March, 1903—continued.

Kind of Mineral.	Number of Workings.		Number of Persons Employed.	
	True Mines.	Underground Quarries.	True Mines.	Underground Quarries.
Gypsum ... ..	—	14	—	152
Iron ore ... ..	1	—	69	—
Lead ore, argentiferous ... ..	3	—	154	—
Limestone... ..	—	28	—	317
Magnesia, sulphate of ... ..	1	—	16	—
Marble ... ..	—	1	—	10
Salt (rock salt) ... ..	1	—	28	—
Sandstone... ..	—	13	—	281
Slate ... ..	—	37	—	479
Total ... ..	16	93	448	1,239

TABLE 507.

QUANTITY of MINERALS produced during the Years ended 31st March, 1902 and 1903

Mineral.	Year.	
	1902.	1903.*
	Metric Tons.	Metric Tons.
Anthracite ... ..	*	—
Bituminous limestone ... ..	*	—
Brown coal ... ..	*	—
Cement (Portland) ... ..	175,065	—
„ (Roman) ... ..	17,190	—
Fireclay ... ..	*	—
Gypsum ... ..	49,807	—
Iron ore ... ..	*	—
Lime (hydraulic) ... ..	201,174	—
Magnesium sulphate ... ..	*	—
Marble ... ..	*	—
Marl ... ..	*	—
Potstone ... ..	*	—

\* Figures not available.

TUNIS—continued.

TABLE 509.

QUANTITY and VALUE of MINERALS produced during the Years 1902 and 1903.\*

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Fireclay ... ..	4,500	8,550	13,070	16,910
Flags ... ..	826	7,516	2,483	12,220
Lead ore ... ..	12,892	812,000	12,752	870,000
Lead and zinc ores mixed ... ..	3,513	59,000	3,056	112,000
Limestone ... ..	24,595	422,197	38,525	738,760
Paving stones ... ..	3,164	43,664	6,238	69,644
Phosphate of lime ... ..	264,930	5,378,079	352,088	6,529,206
Plaster and cement ... ..	5,650	269,240	9,334	333,887
Potter's clay ... ..	7,000	11,200	6,400	7,830
Salt from marshes and salt lakes ... ..	21,600	70,000	18,846	59,200
Sand, gravel, and flint ... ..	—	—	50,537	89,987
Stone (dressed for building) ... ..	128,916	379,245	445,068	7,307,530
„ (broken) ... ..	170,930	376,046	263,270	756,240
Zinc ore (calcined) ... ..	18,400	1,415,000	21,262	1,926,000
Total value in Francs ... ..	—	9,251,737 (a)	—	18,829,414
„ „ in £ sterling ... ..	—	£370,069 (a)	—	£753,177

(a) Corrected figures.

Turkey.†

The mineral resources of the Ottoman Empire are great, but owing to deficient transportation facilities they are almost entirely undeveloped. No official statistics are published.

Alum.—A little alum is manufactured.

Antimony.—Several antimony mines are being worked; the Allkhar mines, near Rozdan, yielded 1,200 tons of 55 per cent. ore in 1892, and the shipments from mines near Aidin amounted to 1,322 tons in 1895. 267 tons, valued at £2,793 were exported from Salonica in 1900, and 266 tons valued at £4,029 from Smyrna in 1901 and 481 tons valued at £7,171 in 1902.‡

\* Return furnished by the French Government and published in the *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1902 and pour l'année 1903*.

† Dominian, "Mining in Turkey." *Eng. Min. Jour.*, Vol. LXXVIII., No. 5, pp. 184 and 185.

‡ Consular-Assistant Heard, "Trade of Salonica and District for the year 1902." *Dipl. and Cons. Reports*, No. 3100, Ann. Ser., 1903 [Cd. 1766-34]. Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1902-3." *Dipl. and Cons. Reports*, No. 3,171, Ann. Ser., 1904 [Cd. 1766-104] p. 16. Whitehead, "Mining Industries and Forestry in Turkey." *Dipl. and Cons. Reports*, No. 589, Ann. Ser., 1903 [Cd. 1387-2].

TURKEY—continued.

*Iron.*—Large deposits of iron ore exist at Beirut-Dagh in the province of Aleppo, but are not worked.\*

*Manganese.*—There are manganese mines in Macedonia and in Asia Minor. 3,500 tons of ore were exported from Salonica and 36,000 tons from Stratonie in 1903.†

*Marble.*—Beautiful mottled marble is now being quarried in the Island of Scio.‡

*Meerschaum.*—Mining meerschaum is an industry of some importance at Sari-sou, Sépétjdji, Gheikli and Menlou, and several thousand persons are employed in digging the stone and preparing it for the market.\*

*Petroleum.*—Oil is obtained from wells at Myriofito and Hora on the north coast of the Sea of Marmora.\*

*Salt.*—This is a Government monopoly; the mineral is obtained from sea water, brine lakes or springs, and rock salt mines. The rock salt mines are worked near Van in Armenia. 203,128½ tons of salt were produced in the year 1893–4. The tax on salt collected in the Trebizond District in 1903 amounted to about £91,000.¶ Rock salt is also widely distributed over many parts of Tehama.¶¶ 13,100 tons, valued at £42,607, were exported from Smyrna in 1902.†

*Silver-lead.*—Deposits of argentiferous galena are worked at Balia, in the Sandjak of Karassi, and at Avnie, in the Caza of Adramit. The Kodja Gumush mine at Balia produces annually from 4,000 to 6,000 tons of ore, yielding 82 per cent. of lead and from 1¼ to 4 per cent. of silver.\* The output of fine silver for Turkey in 1902 is stated\*\* to have been 480,566 ozs. (Kilos. 14,949).

*Zinc Ore.*—Calamine deposits are worked by a French company in the Island of Scio.‡ In 1901 the quantity of zinc exported from Trizibond was 1,700 tons.††

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United States.††

The United States are the greatest producers of coal, iron, and copper in the world.

*Coal.*—The total production of coal in 1903 was 324,191,615 metric tons, of which 67,683,089 metric tons were anthracite and 256,508,526 true bituminous coal. More than one-half of the mineral fuel raised in the United States is produced by Pennsylvania. The anthracite comes almost entirely from Pennsylvania; Colorado and New Mexico yield very small quantities.

In the case of anthracite there is an increase of more than 30 million metric tons, and in bituminous coal an increase of more than 20 million metric tons; taking anthracite and bituminous coal together, there is a net increase of more than 50 million metric tons.

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\* Vice-Consul Waugh, "Trade of Constantinople and District for the year 1901." *Dipl. and Cons. Reports*, No. 2813, Ann. Ser., 1902 [Cd. 786–117], and Consul Barnham, "Trade of the Vilayets of Aleppo and Adana for the year 1903." *Dipl. and Cons. Reports*, No. 3154, Ann. Ser., 1904 [Cd. 1766–88].

† Consular-Assistant Du Vallon, "Trade of Salonica and District for the year 1903." *Dipl. and Cons. Reports*, No. 3250, Ann. Ser., 1904 [Cd. 1766–184], and Consul General Cumberbatch, "Trade of Smyrna and District for the years 1902–03." *Dipl. and Cons. Reports*, No. 3,170, Ann. Ser., 1904 [Cd. 1765–104].

‡ Consul-General Cumberbatch, "Trade of Smyrna and District for the years 1897–99." *Dipl. and Cons. Reports*, No. 2462, Ann. Ser., 1900 [Cd. 1–99].

§ *Ost. Zeitsch. f. B. u. Huttenwesen*, Vol. XLIV., 1897, p. 223.

¶ Consul Longworth, "Trade of Vilayet of Trebizond for the year 1903." *Dipl. and Cons. Reports*, No. 3160, Ann. Ser., 1904 [Cd. 1766–94].

¶¶ Consul Devey, "Trade of Jeddah and Hodeidah for the year 1897." *Dipl. and Cons. Reports*, No. 2203, Ann. Ser., 1899 [C. 9044–29].

\*\* Annual Report of the Director of the United States Mint for the fiscal year ended 30th June, 1903, Washington, 1903 p. 145.

†† Whitehead, "Mining Industries and Forestry in Turkey." *Dipl. and Cons. Reports*, No. 589, Ann. Ser., 1903 [Cd. 1387–2].

‡‡ Official information furnished by the United States Geological Survey, Washington. Many useful statistics relating to the United States, and much valuable information concerning mines and minerals all over the world are contained in the volumes entitled *The Mineral Resources of the United States*, published by the Department of the Interior, Washington; and also in *The Mineral Industry: Its Statistics, Technology and Trade*, published by the Proprietors of the Engineering and Mining Journal, New York and London.



UNITED STATES—continued.

TABLE 511—continued.

COAL-CUTTING MACHINES employed in the UNITED STATES in the year 1903, arranged according to their mode of action—continued.

State.	Chain Machines.	Percussive Machines.	Long Wall Machines.	Total.
Kentucky ... ..	105	202	1	308
Maryland ... ..	—	36	—	36
Michigan ... ..	—	46	—	46
Missouri ... ..	—	4	29	33
Montana ... ..	2	61	—	63
New Mexico... ..	12	—	—	12
North Dakota ... ..	7	2	—	9
Ohio ... ..	673	51	—	724
Pennsylvania ... ..	1,039	2,267	4	3,310
Tennessee ... ..	6	45	—	51
Texas... ..	2	6	—	8
Utah ... ..	—	13	—	13
Virginia ... ..	10	—	—	10
West Virginia ... ..	430	358	—	788
Wyoming ... ..	17	42	—	59
Total ... ..	2,717	3,887	54	6,658

*Copper.*—There are three great copper States : Montana, Michigan, and Arizona ; the first furnished in 1903 about 38·9, the second 27·5, and the third 21·1 per cent. of the total output of the whole country, which was 316,631 metric tons of metal, equal to more than half of the world's production.

*Gold.*—The principal gold-producing States are Colorado with a yield in 1903 of 1,090,376 ozs., California 779,057 ozs., and South Dakota 330,243 ozs.

*Igneous rocks.*—The value of granite, &c., quarried in 1903 amounted to \$18,436,087 The principal producing States are California, Connecticut, Maine, Massachusetts, New Hampshire, and Vermont.

*Iron.*—More than five-sevenths of the iron is obtained from the States of Minnesota and Michigan ; the former produced more than 15½ million metric tons of ore in 1903, and the latter more than 10½ million tons. The total output of ore from the United States was 35½ million metric tons, a decrease of half a million tons compared with 1902 : about 86·6 per cent. of the ore is red hematite.

*Lead.*—Idaho was again the greatest producer in 1903, followed by Utah and Colorado the total production of 254,014 metric tons exceeded that of the previous year by 9,972 tons.

*Marble.*—The value of the total output of marble in 1903 amounted to \$5,362,686 ; of this amount Vermont contributed \$3,011,505, or more than one-half.

*Mineral Waters.*—The output of all the mineral springs in the United States amounted to 51,242,757 gallons, valued at \$9,041,078, which is a decrease of over 13 million gallons in quantity and an increase of nearly a quarter of a million dollars in value compared with 1902. The leading States in 1903 were Michigan and Massachusetts. Next comes Kansas, and then Virginia, Minnesota, New York, and Pennsylvania.

*Natural Gas.*—At the close of the year 1903 there were 15,490 boreholes producing natural gas. The output of the year was 238,769,067,000 cubic feet, valued at \$35,815,360, or more than 7 millions sterling.

UNITED STATES—*continued.*

*Petroleum.*—The yield of the oil-wells of the United States almost equals that of all the rest of the world put together. In 1903 the production was 100,461,337 barrels of 42 gallons, or nearly 12 million barrels more than the previous year.

The principal oil-producing States are California, Ohio, Texas, West Virginia, Pennsylvania, Indiana, and New York.

*Phosphate of Lime.*—The three great phosphate States are Florida, South Carolina, and Tennessee, with a production in 1903 of 860,336, 258,540 and 460,530 tons respectively.

*Quicksilver.*—This mineral is obtained in California, Texas and Nevada. The first-named State produced in 1903 about nine-tenths of the total output, and Texas about one-tenth.

*Salt.*—Previous to 1893 Michigan was the chief salt-producing State; in that year New York assumed the lead and maintained it until 1901, when Michigan again resumed the supremacy, but was surpassed in 1902 by New York with a production of 8,523,389 barrels against 8,131,781 obtained by Michigan. In 1903 the total production of the whole country amounted to 18,968,089 barrels, of which New York contributed 8,170,648 barrels.

*Silver.*—The silver yield for 1903 amounted to 54,300,000 ozs., or 1,200,000 ozs. less than in the previous year. The production of Colorado fell off by 2,685,800 ozs., Montana by 601,500, ozs., and South Dakota by 119,000 ozs., but that of Idaho was increased by 652,600 ozs.

*Zinc.*—The production of zinc in the United States in 1903 was 144,443 metric tons, which is the highest quantity hitherto recorded; Arkansas, Kansas, Illinois, Missouri, New Jersey, and Wisconsin were the principal producing States.

It is beyond the province of this Report to enter into minute details concerning each individual State; but a few facts relating to those in which mining is one of the important industries may with propriety be inserted from time to time.

## PENNSYLVANIA.\*

The most important mining State is Pennsylvania, which produced 103,713,982 short tons (94,088,707 metric) of bituminous coal in 1903, as against 98,946,203 (89,763,407 metric) in 1902, and 67,171,951 long tons (68,250,553 metric) of anthracite, as against 36,911,554 (37,504,255 metric). The total increase in the output for the year was 38,659,424 short tons (35,071,599 metric).

The number of persons employed in and about mines of bituminous coal in 1903 was 151,745, and in and about anthracite mines 151,827.

The death-rate per 1,000 persons employed in and about bituminous mines was 2.65, and in and about anthracite 3.41; and the death-rate from accidents underground per 1,000 persons employed underground in all coal mines was 3.54: as in the year 1902 nearly 50 per cent. of the total deaths at bituminous and anthracite mines in 1903 were due to falls of ground.

## ILLINOIS.†

This State comes second among the coal-producing States, though a very long way behind Pennsylvania. The output of Illinois for the year ending 30th June 1903 was 34,955,400 short tons (31,711,331 metric) or an increase of nearly 5 million short tons (4½ million metric) compared with 1902.

The death-rate from accidents in 1902-3 was 3.13 per 1,000 persons employed: more than 49 per cent. of the deaths were caused by falls of ground. The average death-rate for the 21 years, 1883-1903, is 2.2, whilst the output in 1903 was nearly three times that of 1883.

The amount of coal cut by machinery during the year 1902-03 was 7,646,777 short tons, and 522 machines were employed.

\* Report of the Bureau of Mines of the Department of Internal Affairs of Pennsylvania, 1903, Harrisburg, 1904.

† Twenty-second Annual Coal Report, prepared by the Illinois Bureau of Labor Statistics, 1903, Springfield, Ill., 1904.

UNITED STATES—*continued.*

TABLE 512.

PERSONS EMPLOYED at COAL MINES in the various STATES during the Years  
1902 and 1903.\*

State.	1902.		1903.	
	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.
Alabama ... ..	16,439	630	21,438	544
Arkansas... ..	3,595	541	4,157	536
California ... ..	217†	402	208†	507
Colorado... ..	8,956	826	9,229	804
Georgia ... ..	755	548	681	612
Idaho ... ..	20	202	32	133
Illinois ... ..	47,411	695	50,596	731
Indiana ... ..	15,457	611	17,017	634
Indian Territory ... ..	5,574	506	7,704	457
Iowa ... ..	12,434	475	14,162	453
Kansas ... ..	9,461	557	10,924	535
Kentucky ... ..	13,727	493	14,354	525
Maryland ... ..	5,827	905	5,859	827
Michigan ... ..	2,344	412	2,768	494
Missouri... ..	9,742	400	9,544	444
Montana... ..	1,938	805	2,155	691
New Mexico ... ..	1,849	567	1,789	862
North Carolina ... ..	40	575	49	354
North Dakota ... ..	402	563	486	594
Ohio ... ..	38,965	604	41,936	593
Oregon ... ..	265	248	235	388
Pennsylvania	Anthracite	148,141	279	150,483
	Bituminous	112,630	875	129,265
Tennessee ... ..	8,750	501	9,961	482
Texas ... ..	2,369	381	2,380	389
Utah ... ..	1,826	862	1,925	874
Virginia ... ..	3,912	814	5,608	615
Washington ... ..	4,404	609	4,768	670
West Virginia ... ..	35,500	692	41,554	706
Wyoming ... ..	5,250	844	4,993	928
Total for United States ...	518,200	582	566,260	631

\* Official Return furnished by the United States Geological Survey, Washington.

† Includes Alaska.



UNITED STATES—continued.

TABLE 513.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES, 1902 and 1903.\*

Product.	Customary Measures.	1902.			1903.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
<i>Non-Metallic.</i>							
Arsenious oxide .. .. .	Short tons ..	1,353	1,227	\$ 81,180	611	554	\$ 56,696
Asbestos .. .. .	" ..	1,005	912	16,200	887	805	16,760
Asphaltum .. .. .	" ..	105,458	95,871	765,048	101,225	91,831	1,005,446
Barytes .. .. .	" ..	61,688	55,945	203,154	50,397	45,720	152,150
Bauxite .. .. .	Long tons ..	29,222	26,691	128,206	48,087	43,659	171,306
Borax .. .. .	Short tons ..	17,404	15,789	2,447,614	—	—	—
	" ..	2,600	2,359	91,000	34,430	31,235	661,400
Bromine .. .. .	Pounds ..	513,890	233	128,472	598,500	271	167,580
Building stone .. .. .	—	—	—	64,559,099	—	—	67,960,468
Cement .. .. .	Bls.‡ ..	25,753,504	3,504,514	25,368,380	29,899,140	5,082,118	31,931,341
Chromic iron ore .. .. .	Long tons ..	315	320	4,567	150	152	2,250
Clay (brick) .. .. .	—	—	—	15,000,000	—	—	15,000,000
.. (all other than brick) ..	Short tons ..	1,455,357	1,320,291	2,061,072	1,650,835	1,497,628	2,649,042
Coal, anthracite\$ .. .. .	Long tons ..	38,940,710	37,533,879	78,173,586	66,613,454	67,683,089	152,036,448
.. bituminous .. .. .	Short tons ..	260,216,844	236,067,172	290,858,483	282,749,348	256,508,526	351,687,933
Cobalt oxide .. .. .	Pounds ..	3,730	2	6,714	120,000	54	226,000
Corundum and emery .. .. .	Short tons ..	4,251	3,856	104,805	2,542	2,306	64,102
Feldspar .. .. .	" ..	45,287	41,084	250,424	41,891	38,003	256,733
Fibrous talc .. .. .	" ..	71,100	64,501	615,350	60,230	54,640	421,400
Flint .. .. .	" ..	36,365	32,990	144,209	55,233	50,107	156,947
Fluorspar .. .. .	" ..	48,018	43,582	271,832	42,523	38,577	213,617
Fuller's earth .. .. .	" ..	11,492	10,425	98,144	20,693	18,773	160,277
Garnet (abrasive) .. .. .	" ..	3,926	3,582	132,820	3,950	3,583	132,500
Glass Sand .. .. .	" ..	943,135	855,606	807,797	823,041	746,661	855,828
Graphite .. .. .	{ Crystalline	3,966,824	1,799	182,108	4,538,155	2,068	225,554
	{ Amorphous	4,739	4,299	—	16,591	15,051	—
Grindstones .. .. .	—	—	—	607,431	—	—	721,446
Gypsum .. .. .	Short tons ..	816,478	740,704	2,069,341	1,041,704	945,028	3,792,943
Lithium .. .. .	" ..	1,245	1,129	25,75	1,155	1,048	23,425
Infusorial earth and Tripoli ..	" ..	5,685	5,139	53,241	9,219	8,363	78,273
Limestone for iron flux .. ..	Long tons ..	12,139,248	12,334,172	5,271,252	12,029,719	12,322,894	5,423,732
Magnetite .. .. .	Short tons ..	2,830	2,587	8,490	3,744	3,397	10,595
Manganese ore .. .. .	Long tons ..	7,477	7,597	60,911	2,825	2,870	25,335
Marls .. .. .	Short tons ..	12,439	11,285	12,741	34,211	31,036	22,521
Mica .. .. .	{ Sheet	373,286	189	83,843	90,100	41	17,128
	{ Scrap	1,400	1,270	35,006	1,693	1,536	41,990
Millstones .. .. .	—	—	—	59,808	—	—	52,552
Mineral waters .. .. .	{ Gallons sold	64,859,451	—	8,793,761	51,242,757	—	9,041,078
	{ Litres	294,686,192	—	—	232,819,314	—	—
Monazite.. .. .	Pounds ..	802,000	364	64,160	862,000	391	64,630
Natural gas .. .. .	—	—	—	30,887,863	—	—	35,815,390
Oilstones.. .. .	—	—	—	221,762	—	—	366,857
Paints, mineral .. .. .	Short tons ..	73,049	66,270	944,332	62,122	56,357	646,222
Petroleum .. .. .	{ Bls., 42 gals. ..	84,768,916	—	71,178,910	100,461,337	—	94,694,050
	{ Litres	16,833,967,695	—	—	19,170,558,342	—	—
Phosphate rock .. .. .	Long tons ..	1,490,314	1,514,214	4,693,444	1,581,576	1,606,972	5,319,294
Precious stones .. .. .	—	—	—	328,450	—	—	321,400
Pumice .. .. .	Short tons ..	700	635	2,750	885	903	2,665
Pyrites .. .. .	Long tons ..	207,874	211,212	947,089	233,127	236,870	1,109,818
Quartz (Crystalline) . .. .	Short tons ..	15,104	13,702	84,335	8,938	8,109	76,908
Rutile .. .. .	Pounds ..	—	—	—	—	—	—
Salt .. .. .	Bls., 280 lbs. ..	23,849,231	3,029,023	5,668,636	18,968,089	2,409,083	5,296,968
Soapstone .. .. .	Short tons ..	24,854	24,362	525,157	26,671	24,196	418,480
Sulphur .. .. .	" ..	—	—	—	—	—	—
Uranium and Vanadium .. .. .	" ..	3,810	3,456	48,125	19	17	5,625
Zinc, white .. .. .	" ..	52,645	47,759	4,016,499	62,962	57,119	4,801,718
Zircon .. .. .	Pounds ..	—	—	—	3,000	1	570
Total value of non-metals in \$ ..	..	—	—	617,241,154	—	—	794,403,561
Total value of non-metals in £ sterling.	..	—	—	£128,745,817	—	—	£163,121,881

\* Official Return furnished by the United States Geological Survey, Washington.  
† The United States Geological Survey Department calculates on the basis of 2,204.6 lbs. = 1 metric ton.  
‡ Barrels of 300 lbs. for natural rock cement, and of 400 lbs. for artificial Portland cement. The output of Portland Cement in 1903 was 22,342,973 barrels.  
§ Represents production from Pennsylvania only. ¶ Included under unspecified products. ¶ Included under pyrites.

UNITED STATES—continued.

TABLE 513—continued.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES, 1902 and 1903—continued.

Product	Customary Measures.	1902.			1903.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
<i>Metallic.</i>				\$			\$
Aluminum .. .. .	Pounds .. ..	7,300,000	3,311	2,284,590	7,500,000	3,402	2,284,900
Antimony .. .. .	Short tons ..	3,561	3,231	634,506	3,128	2,838	548,433
Copper .. .. .	Pounds .. ..	659,508,644	299,151	76,568,954	698,044,517	316,831	91,506,006
Gold (fine) .. .. .	Troy ounces ..	3,870,000	—	80,000,000	3,560,000	—	73,591,700
	Kilos. .. ..	120,371			110,729		
Iron, pig .. .. .	Long tons ..	17,821,307	18,107,470	372,775,000	18,009,252	18,298,433	344,350,000
Lead .. .. .	Short tons ..	270,000	244,942	22,140,000	280,000	254,014	23,530,000
Nickel .. .. .	Pounds .. ..	5,748	5	2,701	114,200	53	45,900
Platinum .. .. .	Troy ounces ..	94	—	1,814	110	—	2,080
	Kilos. .. ..	3			3		
Quicksilver .. .. .	Flasks 76½ lbs. ..	34,291	1,190	1,487,848	35,620	1,336	1,544,984
Silver (fine) .. .. .	Troy ounces ..	55,500,000	—	71,767,575	54,300,000	—	70,206,000
	Kilos. .. ..	1,728,244			1,688,920		
Zinc .. .. .	Short tons ..	156,827	142,363	14,625,596	159,219	141,443	16,717,965
Total value of metals in \$ .. .. .	.. .. .	—	—	642,258,584	—	—	634,318,003
“ “ “ “ £ sterling .. .. .	.. .. .	—	—	£131,880,613	—	—	£128,196,713
Estimated value of products unspecified. .. .. .	.. .. .	—	—	\$1,000,000	—	—	\$1,000,000
Total value in \$ .. .. .	.. .. .	—	—	1,280,509,738	—	—	1,419,731,569
“ “ “ “ £ sterling .. .. .	.. .. .	—	—	£268,631,569	—	—	£291,523,936

The following tables give further details concerning the output of coal and iron ore:—

TABLE 514.

COMPARATIVE OUTPUT of COAL for the Years ending December 31st, 1902 and 1903, in the principal COAL-PRODUCING STATES.\*

State.	1902.	1903.	Comparison with preceding Year.
	Metric Tons.	Metric Tons.	Metric Tons.
Illinois ... ..	29,882,403	33,527,265	+ 3,644,862
Ohio ... ..	21,708,489	22,532,979	+ 824,490
Pennsylvania† { Anthracite ...	37,504,255	68,250,553	+ 30,746,298
	89,763,407	94,088,707	+ 4,325,300
West Virginia ... ..	22,290,507	26,614,570	+ 4,324,063

\* Information furnished by the United States Geological Survey, Washington.  
† Report of the Bureau of Mines of the Department of Internal Affairs of Pennsylvania, 1903, Harrisburg, 1904.

UNITED STATES—continued.

DEATHS from ACCIDENTS at COAL MINES in the various STATES, during the 1902 and 1903—continued.

State.	1902.			1903.		
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	M o
Maryland ... ..	11	2.15	425,407	*	—	
Michigan ... ..	7	2.99	113,424	*	—	
Missouri ... ..	10	1.09	368,645	17	1.85	
Montana ... ..	12	6.19	117,997	5	2.32	
New Mexico ... ..	17†	7.26	72,550	17†	7.26	
North Carolina ... ..	*	—	—	*	—	
North Dakota ... ..	*	—	—	*	—	
Ohio ... ..	95	2.54	228,510	114	2.75	
Pennsylvania {	Anthracite ...	300	2.70	518	3.41	
	Bituminous ...	456	3.37	402	2.65	
Tennessee ... ..	226	25.51	16,989	26	2.61	
Texas ... ..	*	—	—	*	—	
Utah ... ..	8	3.11	186,138	7	3.64	
Virginia ... ..	*	—	—	*	—	
Washington ... ..	34	7.83	71,796	25	5.13	
West Virginia‡ ... ..	120	3.41	197,785	159	4.03	
Wyoming§ ... ..	13	2.27	329,381	*	—	
Total and average for States for which figures have been received.	1,732	3.26	152,991	1,715¶	3.09	

It will be seen from the foregoing Table (516) that, whilst certain State an improvement, others record a higher death-rate than in the year 1902. whole the average figure is about the same in both years.

Complete statistics concerning the fatalities at ore mines are lacking.  
There were 33 deaths from accidents,\*\* equivalent to 2.42 per 1,000 persons em at the Lake Superior copper mines during the year ended 30th September, 1903.  
The death-rates per 1,000 persons employed underground at the metalliferous n Colorado†† during the seven years 1896 to 1902 have been as follows :—5.966 5.458, 3.743, 3.823, 4.919, and 3.274. All these mortality rates are high.

\* No report.  
† For Fiscal Year ended June 1903.  
‡ For Fiscal Year ended June 1902 and 1903  
§ For year ended September 1902 and 1903  
|| Excluding Georgia, North Carolina, North Dakota, Texas, and Virginia.  
¶ Excluding Georgia, Kansas, Maryland, Michigan, North Carolina, North Dakota, Texas, Virginia and Wyoming  
\*\* Annual Report of the Inspector of Mines for Year ending 30th September 1903. Houghton, 1903.  
†† Report of the State Bureau of Mines for the Years 1901-2. Denver, 1903, p. 250.



UNITED STATES—continued.

In the metalliferous mines of Montana\* there were 47 persons killed in 1902, equal to a death-rate of 3.41 per 1,000 persons employed.

In the lead and zinc mines of the State of Missouri† 21 fatalities happened in the year 1903, and the death-rate was 1.69 per 1,000 persons employed‡.

United States Possessions.—(See CUBA, PHILIPPINE ISLANDS, AND PORTO RICO.)

Uruguay.

The number of persons employed at mines and quarries in the Republic of Uruguay is unknown. Auriferous quartz appears to be the principal mineral worked; the quantity of gold obtained in 1903 was only 117 kilos, so that the number employed in mining cannot be large.

TABLE 517.

QUANTITY and VALUE of GOLD produced in 1902 and 1903.‡

Mineral	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Kilos.	£	Kilos.	£
Gold ... ..	131§	12,295	117§	10,956

Venezuela.||

According to official statements the country abounds in asphalt, coal, petroleum, salt, and sulphur, as well as in the ores of copper, gold, iron, lead, silver, and tin; but these rich mineral resources are almost entirely neglected.

*Asphalt.*—The quantity exported from Maracaibo in 1903 was 14,567 metric tons, valued at £58,871.

*Gold.*—The gold mining industry does not make much progress. The precious metal is obtained mainly from quartz veins in the Caratal or Yuruari district.

*Iron.*—The deposits of iron ore at Imataca, on the Lower Orinoco, are not yet being worked.

\* Fourteenth Annual Report of the Inspector of Mines of the State of Montana for the years 1901 and 1902, Helena, 1903.  
† Sixteenth Annual Report of the State Lead and Zinc Mine Inspector of the State of Missouri for the year ending 31st December, 1903, Jefferson City, 1904.  
‡ Return furnished by the "Direccion General de Estadistica. Seccion Industrial y de Minas," Montevideo.  
§ Fine Gold 70 ‰. Fine Silver 30 ‰.  
|| Acting Consul Andral, "Trade of Venezuela for the Year 1902." *Dipl. and Cons. Reports*, No. 3 017 Ann. Ser. 1903 [Cd. 1386-94]; Consul de Lemos "Trade of Ciudad Bolivar for the Year 1901." *Dipl. and Cons. Reports*, No. 2,772, Ann. Ser. 1902 [Cd. 786-76]; *Mineral Resources of the United States for 1903*, published by the United States Geological Survey, Washington, 1904; *Annual Report of the Director of the United States Mint for the Fiscal year ended 30th June, 1903*, Washington, 1903; and *The Mineral Industry for 1903*, Vol. XII., New York, 1904.

VENEZUELA—continued.

*Salt* is a Government monopoly ; the quantity obtained in 1902 was 10,153 metric tons valued at 2,842,860 bolivares (£112,589).

*Sulphur*.—A small quantity of sulphur was shipped from a mine at Carupana in 1903.

TABLE 518.

QUANTITY and VALUE of MINERALS produced during the years 1902 and 1903.

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Asphalt ... ..	10,770	(Not stated.)	14,567*	58,871
Gold (fine) ... ..	653	89,076	451	61,602
Salt ... ..	10,153	112,589	(Not stated.)	—
Silver (fine)... ..	58	205	—	—

\* Quantity exported.

## INDEX.

A.		Page.
ABERDEEN, Clay ... ..		160, 176
" Gravel and sand ... ..		160, 212
" Igneous rocks ... ..		160, 215
" Sandstone ... ..		161, 267
" Slate ... ..		161, 271
" Persons employed ... ..		66, 161
Abyssinia, Mineral Output ... ..		301, 362
Accidents, Fatal, at Mines in the United Kingdom 7, 9, 67-96,		302, 303, 307
" " Mines under the Coal Mines		
Act ... ..	7, 9, 22, 23, 42	
" " Mines under the Metalliferous		
Mines Act ... ..	7, 9, 24, 25, 43	
" " Quarries under the Quarries		
Act ... ..	7, 9, 26, 27, 96-106	
" " in the several Coal-fields ... ..	91-94	
" " at Coal Mines ... ..	72	
" " Boiler explosions ... ..	89, 90	
" " Descent or ascent ... ..	22, 23, 50	
" " Explosions of Fire-damp or Coal-		
dust ... ..	22, 23, 35, 42, 43, 73-77	
" " Explosives ... ..	22-25, 83-85	
" " Falls of ground 22-25, 35, 42, 43, 77-80		
" " Haulage... ..	22, 23, 35, 83, 86, 87	
" " in the several Inspection districts 22-25		
" " at Iron Mines ... ..	72	
" " Irruptions of water ... ..	22, 23, 83, 86	
" " Miscellaneous underground 22-25, 35, 42,		
43, 83-88		
" " " on surface 22-25, 89, 91		
" " Machinery ... ..	22, 23, 83, 87, 89	
" " at "other Mines" than Coal and Iron 72		
" " Railways, sidings, &c. ... ..	22-25, 89-91	
" " Ropes and chains breaking 22, 23, 82, 83		
" " Shafts ... ..	22-25, 35, 42, 43, 80-83	
" " Suffocation by natural gases 22, 23, 83, 85,		
86		
" " Surface ... ..	22-25, 35, 42, 43, 88-91	
" " Trams and tubs ... ..	22, 23, 83, 86, 87	
" " Anichinruive Colliery ... ..	85	
" " Baggeridge Sinking Pit ... ..	81, 82	
" " Biggerford Colliery ... ..	75	
" " Bogleshole, No. 4 Pit ... ..	75, 76	
" " Bunkers Hill Colliery ... ..	86	
" " Chanters Colliery ... ..	81	
" " Chickenly Heath Colliery ... ..	87	
" " Coegnant Colliery ... ..	86	
" " Dudley Wood Colliery ... ..	68, 88	
" " Ferndale, No. 5 Colliery ... ..	76	
" " Holytown Colliery ... ..	87	
" " Llwynypia Colliery ... ..	82	
" " Moss Hall Colliery ... ..	81	
" " Rosehall, No. 5 Pit ... ..	87	
" " Sacriston Colliery ... ..	86	
" " Shelton Colliery ... ..	88	
" " Sherwood Colliery ... ..	87	
" " Wingate Grange Colliery ... ..	81	
" " at Mines in :		
Algeria ... ..	302, 364	
Australia ... ..	302, 310	

## Accidents, Fatal, at Mines in—cont.

	Page.
Austria ... ..	302, 370-378
Belgium ... ..	302, 382
Bohemia ... ..	374
Bosnia and Herzegovina ... ..	302, 377
British Columbia... ..	302, 329, 330
British Guiana ... ..	302, 325
Bulgaria ... ..	302, 385
Cape Colony ... ..	302, 335-337
Ceylon ... ..	302, 339
Federated Malay States... ..	302, 342
France ... ..	302, 402
German Empire ... ..	302, 409, 410
Gold Coast ... ..	302, 343
Greece ... ..	421
Greenland ... ..	392
Holland ... ..	302, 423
Hungary ... ..	302, 375
India ... ..	302, 348, 349
Italy ... ..	302, 428, 429
Japan ... ..	302, 431
Kimberley... ..	302, 335-337
Mexico ... ..	302, 434
Natal ... ..	302, 350
Newfoundland ... ..	302, 351
New South Wales ... ..	302, 312
New Zealand ... ..	302, 353
Nova Scotia ... ..	302, 331
Ontario ... ..	302, 332
Portugal ... ..	302, 442
Prussia ... ..	415-418
Quebec ... ..	302, 333
Queensland ... ..	302, 315
Rhodesia ... ..	302, 356
Russia ... ..	302, 449
Saxony ... ..	419
Servia ... ..	302, 451
Spain ... ..	302, 456
Sweden ... ..	302, 458
Switzerland ... ..	302, 461
Tasmania ... ..	302, 317
Transvaal ... ..	302, 358, 359
United States ... ..	302, 471, 472
Victoria ... ..	302, 319
Western Australia ... ..	302, 321
" " Union Colliery, British Columbia ... ..	330
" " Giumentaro Sulphur Mine, Italy ... ..	429
" " Prussian Collieries ... ..	417
" " at Quarries :	
in United Kingdom 7, 26, 27, 96-106	
from Blasting 26, 27, 99, 101-104	
at different kinds of Quarries 98, 99	
during descent or ascent 26, 27, 100,	
101, 104	
Explosives... ..	26, 27, 102-104
Falling from ledges 26, 27, 100, 104,	
105	
Falls of ground 26, 27, 99, 101, 102	
Inclined and engine planes 26, 27, 100,	
104	
in the several Inspection districts 26, 27	
Machinery... ..	26, 27, 100, 104,
105	
Miscellaneous, inside and outside 26,	
27, 100, 101, 104, 105	
Railways, tramways, &c. 26, 27, 100,	
104-106	



	Page.		Page.
Accidents, Fatal, at Quarries in :		Antimony, Price in London ... ..	16
Algeria ... ..	302, 364	" Smelters and refiners ... ..	16
Belgium ... ..	302, 383	" or Antimony ore, Output of :	
France ... ..	302, 402	United Kingdom ... ..	1
German Empire ... ..	302, 411	Algeria ... ..	3
India ... ..	348	Australia ... ..	3
Italy ... ..	302, 429	Austria ... ..	3
Newfoundland ... ..	302, 351	Bolivia ... ..	3
Russia ... ..	302, 449	Chili ... ..	3
Switzerland ... ..	302, 461	China ... ..	3
" , at Petroleum Workings :		France ... ..	400
Austria ... ..	370, 372	Hungary ... ..	374
" " to Young persons ... ..	35, 73	Italy ... ..	428
" Non-fatal, at Mines ... ..	28-31	Japan ... ..	431
" " Quarries ... ..	32, 33	Mexico ... ..	434
Actinolite, Output of, Canada ... ..	328	New South Wales ... ..	311
" " Ontario ... ..	332	Portugal ... ..	442
Acts of Parliament relating to Mines and Quarries 5, 117, 118		Servia ... ..	451
Aden, Output of Salt ... ..	301, 308	Spain ... ..	454
Aire and Calder Navigation, Coal and Coke traffic ... ..	191	Turkey ... ..	462
Alabama, Accidents ... ..	471	United States ... ..	470
" Output of Iron Ore ... ..	471	Victoria ... ..	319
" Persons employed ... ..	468	Western Australia ... ..	320
" Coal-cutting machines ... ..	465	Antrim Co., Bauxite... ..	163, 172
Algeria, Accidents ... ..	302, 364	" Chert and flint... ..	162, 175
" Mineral output ... ..	301, 363	" Clay ... ..	162, 177
" Persons employed ... ..	300, 362	" Coal ... ..	162, 181, 184
Alum, Output of :		" Igneous rocks ... ..	162, 215
German Empire... ..	407	" Iron ore ... ..	162, 218, 220, 222
Prussia ... ..	414	" Limestone ... ..	163, 253
Sweden ... ..	458	" Salt ... ..	163, 264
Alum clay (see Bauxite) ... ..	172	" Sandstone ... ..	163, 268
Aluminium, Makers in United Kingdom ... ..	173	" Persons employed ... ..	58, 60, 63, 67, 163
" Output of United States ... ..	470	Apatite, Output of Norway ... ..	437
" phosphate, Output of Spain ... ..	454	" " Sweden ... ..	458
" sulphate, Output of German Empire ... ..	407	Arabia, Mining in ... ..	364
" " " Prussia ... ..	415	Argentine Republic, Mineral output ... ..	364
Aluminous earths, Output of France ... ..	401	Argyll, Coal ... ..	160, 181, 184
" " " Spain ... ..	454	" Igneous rocks ... ..	160, 215
" hematite, Production of Ireland ... ..	222	" Limestone ... ..	161, 253
Alum shale, Output of United Kingdom 10, 40, 139, 164, 306		" Sandstone ... ..	161, 267
" " " Austria ... ..	369	" Slate ... ..	161, 271
" stone, Output of Italy ... ..	428	" Persons employed ... ..	57, 63, 66, 161
Alunite, Output of Australia ... ..	309	Arkansas, Accidents... ..	471
" " New South Wales ... ..	311	" Persons employed ... ..	468
Amblygonite, Output of Spain ... ..	454	" Coal-cutting machines ... ..	465
Ambulance work ... ..	117	Arkite, Accidents with ... ..	84
Amethyst, Output of France ... ..	401	Armagh Co., Igneous rocks. ... ..	162, 215
Ammonite, Accidents with... ..	84	" Limestone ... ..	163, 253
Amvis, Accidents with ... ..	84	" Persons employed ... ..	67, 163
Anglesey, Copper precipitate ... ..	160, 200, 201	Arsenic or Arsenic ore, Output of :	
" Gravel and sand ... ..	160, 212	United Kingdom ... ..	10, 40, 139, 167, 168, 306
" Igneous rocks ... ..	160, 214	Canada ... ..	328
" Lead ... ..	241, 243	France ... ..	400
" Limestone ... ..	161, 252	German Empire... ..	400
" Ochre ... ..	161, 256, 257	Japan ... ..	43
" Sandstone ... ..	161, 267	Ontario ... ..	33
" Silver ... ..	241, 243	Portugal ... ..	44
" Zinc ore ... ..	161, 284, 285	Prussia ... ..	41
" Copper smelters ... ..	207	Turkey ... ..	46
" Persons employed ... ..	63, 66, 161	Arsenic refiners ... ..	16
Ankylostomiasis, General Remarks ... ..	115	Arsenical pyrites, Output of :	
" Belgian Decree ... ..	382	United Kingdom ... ..	10, 40, 139, 166, 167, 306
Annam, Mineral output ... ..	424	Italy ... ..	42
Anthracite, Output of :		Saxony ... ..	42
United Kingdom ... ..	182	Spain ... ..	45
France ... ..	400	Arsenious oxide, Output of United States ... ..	459
Italy ... ..	428	Aruba, Mineral Output ... ..	396
Pennsylvania ... ..	467	Asbestos, Output of :	
Portugal ... ..	442	Australia... ..	309
Russia ... ..	447	Canada ... ..	328
Spain ... ..	458	Cape Colony ... ..	334
United States ... ..	469	France ... ..	401
		Quebec ... ..	333
		Russia ... ..	447

	Page.
Asbestos, Output of— <i>cont.</i>	
United States ... ..	469
Western Australia ... ..	320
Asphalt, Output of :	
Austria ... ..	369
Colombia ... ..	390
Cuba ... ..	392
German Empire ... ..	406
Hungary ... ..	374
Italy ... ..	428
Japan ... ..	431
Mexico ... ..	434
Prussia ... ..	414
Russia ... ..	447
Spain ... ..	454
Trinidad ... ..	360
Turkey ... ..	463
United States ... ..	469
Venezuela ... ..	474
Auchincruive Colliery Accident ... ..	85
Australia, Accidents ... ..	302, 303, 310
" Mineral Output ... ..	301, 309
" Persons Employed ... ..	300, 308
Austria, Accidents ... ..	302, 370-373
" Mineral output ... ..	301, 369, 370
" Persons employed ... ..	300, 367-368
Ayrshire, Clay ... ..	160, 176
" Coal ... ..	160, 181, 184
" Gravel and sand ... ..	160, 212
" Igneous rocks ... ..	160, 215
" Iron ore ... ..	160, 218, 219
" Limestone ... ..	161, 253
" Sandstone ... ..	161, 267
" Blast furnaces ... ..	227, 233
" Coal traffic ... ..	190
" Death rate from accidents ... ..	95
" Persons employed ... ..	57, 60, 63, 66, 95, 161

## B.

BAGGERIDGE Sinking Pit Accident ... ..	81, 82
Bahamas, Output of Salt ... ..	301, 321
" Persons employed ... ..	321
Bain, R. D. Remarks on Blasting Accidents at Quarries ... ..	103
Banca, Output of Tin ... ..	393
" Persons employed ... ..	393
Banff, Gravel and sand ... ..	160, 212
" Igneous rocks ... ..	160, 215
" Limestone ... ..	161, 253
" Sandstone ... ..	161, 267
" Persons employed ... ..	66, 161
Barbados, Minerals obtained in ... ..	321
Barytes, Output of :	
United Kingdom ... ..	10, 40, 139, 169-171, 306
Bavaria ... ..	412
Belgium ... ..	381
Canada ... ..	328
France ... ..	401
Newfoundland ... ..	351
Nova Scotia ... ..	331
Quebec ... ..	333
Saxony ... ..	418
Spain ... ..	454
United States ... ..	469
Basalt, diorite, &c. (see also Igneous rocks), Output of	
Bavaria ... ..	412
Basic iron produced in United Kingdom ... ..	228
Basutoland, Minerals ... ..	322

Bauxite, Output of :	
United Kingdom ... ..	10, 40, 139, 172, 306
France ... ..	401
United States ... ..	469
Bavaria, Mineral output ... ..	412, 413
" Persons employed ... ..	412
Bechuanaland Protectorate, Minerals ... ..	322
Bedfordshire, Chalk ... ..	158, 174
" Clay ... ..	158, 176
" Gravel and sand ... ..	158, 212
" Limestone ... ..	159, 252
" Sandstone ... ..	159, 267
" Persons employed ... ..	65, 159
Belgium, Accidents ... ..	302, 382
" Mineral output ... ..	301, 381
" Persons employed ... ..	300, 378, 379
" Coal Seams, particulars of ... ..	380
" Decline of female labour at Mines ... ..	379
" Ankylostomiasis Decree ... ..	381
Bellite, Accidents with ... ..	84, 103
Berkshire, Chalk ... ..	158, 174
" Chert and flint ... ..	158, 175
" Clay ... ..	158, 176
" Gravel and sand ... ..	158, 212
" Limestone ... ..	159, 252
" Sandstone ... ..	159, 267
" Persons employed ... ..	62, 65, 159
Berwick, Igneous rocks ... ..	160, 215
" Sandstone ... ..	161, 267
" Persons employed ... ..	66, 161
Bickford's Igniter ... ..	76
Biggarford Colliery Accident ... ..	75
Billiton, Output of Tin ... ..	393
" Persons employed ... ..	395
Birmingham Canal Navigation's Coal and Coke traffic ... ..	191
Bismuth or Bismuth ore, Output of :	
Australia ... ..	309
Austria ... ..	369
Bolivia ... ..	383
German Empire ... ..	406
Hungary ... ..	374
Japan ... ..	431
New South Wales ... ..	311
Queensland ... ..	314
Saxony ... ..	418
Servia ... ..	451
Spain ... ..	454
Bituminous shale, Output of :	
France ... ..	400
Italy ... ..	428
Spain ... ..	454
Black tin (see Tin ore).	
Blasting, Fatal accidents in Quarries ... ..	26, 27, 99, 101-104
Blast furnaces, Particulars of ... ..	229-234
" in operation from 1873 to 1903 ... ..	234
Blasting gelatine, Accidents with ... ..	84
Bluestone, Output of Australia ... ..	309
" Queensland ... ..	314
Bobbinite, Accidents with ... ..	76, 84
Bogleshole, No. 4 Pit, Accident ... ..	75, 76
Bog ore, Output of Ireland ... ..	10, 20, 139, 173, 306
Bohemia, Accidents ... ..	374
" Persons employed ... ..	373
Boiler explosions at Mines ... ..	28-31, 89, 90
Board of Trade inquiries ... ..	90
Bolivia, Mineral output ... ..	301, 383
Bonaire, Salt workings ... ..	396
Boracite, Output of :	
German Empire ... ..	406
Prussia ... ..	414
Turkey ... ..	463
Borate of calcium, Output of Bolivia ... ..	383
" " " Chili ... ..	387

	Page.		Page
<b>Borax, Output of :</b>		<b>Burnt cupreous pyrites treated at Metal Extraction Works</b>	239
Chili ... ..	387	Metals extracted from ... ..	239
Peru ... ..	439	<b>Bute, Igneous rocks</b> ... ..	160, 215
United States ... ..	469	" Sandstone ... ..	161, 267
<b>Boric acid, Output of Italy</b> ... ..	428	" Persons employed ... ..	66, 161
<b>Borneo (Dutch), Mineral output</b> ... ..	393, 394		
" ( <i>see also</i> British North Borneo).			
<b>Bosnia and Herzegovina, Accidents</b> ... ..	302, 377		
" " Mineral output ... ..	301, 376, 377		
" " Persons employed ... ..	300, 376		
<b>Brazil, Mineral output</b> ... ..	383, 384		
<b>Breconshire, Clay</b> ... ..	160, 176		
" Coal ... ..	160, 181, 182, 184		
" Gravel and sand ... ..	160, 212		
" Iron ore ... ..	160, 218, 219		
" Limestone ... ..	161, 252		
" Sandstone ... ..	161, 267		
" Death-rate from accidents ... ..	95		
" Persons employed ... ..	57, 63, 66, 95, 161		
<b>Bridgewater Canals, Coal traffic</b> ... ..	191		
<b>Briquettes, Production of, in Hungary</b> ... ..	374		
" " Indo-China ... ..	424		
<b>British Borneo, Output of Minerals</b> ... ..	301, 322, 323		
<b>British Central Africa Protectorate, Minerals</b> ... ..	323		
<b>British Columbia, Accidents</b> ... ..	302, 303, 329, 330		
" Mineral output ... ..	329		
" Persons employed ... ..	329		
" Lead Bounty Act ... ..	330		
<b>British Guiana, Accidents</b> ... ..	302, 325		
" Mineral output ... ..	301, 324		
" Persons employed ... ..	300, 324		
" Legislation ... ..	325		
<b>British New Guinea, Mineral output</b> ... ..	301, 325		
" " Persons employed ... ..	300, 325		
<b>British Solomon Islands, Copper</b> ... ..	325		
<b>Broken Hill Lead Mines (New South Wales), Cases of</b>			
lead poisoning ... ..	313		
<b>Bromine, Production of the United States</b> ... ..	469		
<b>Brown coal or Lignite, Output of :</b>			
United Kingdom ... ..	251		
Algeria ... ..	363		
Australia ... ..	309		
Austria ... ..	369		
Bavaria ... ..	412		
Bosnia and Herzegovina ... ..	376		
Bulgaria ... ..	385		
France ... ..	400		
German Empire ... ..	406, 408		
Greece ... ..	421		
Hungary ... ..	375		
Italy ... ..	428		
New Zealand ... ..	353		
Portugal ... ..	442		
Prussia ... ..	414		
Roumania ... ..	444		
Russia ... ..	447		
Saxony ... ..	418		
Servia ... ..	451		
Spain ... ..	454		
Victoria ... ..	318		
<b>Brown iron ore, Output of :</b>			
United Kingdom ... ..	221		
United States ... ..	471		
<b>Buckinghamshire, Chalk</b> ... ..	158, 174		
" Clay ... ..	158, 176		
" Gravel and sand ... ..	158, 212		
" Limestone ... ..	159, 252		
" Persons employed ... ..	65, 159		
<b>Bulgaria, Accidents</b> ... ..	302, 385		
" Mineral output ... ..	301, 385		
" Persons employed ... ..	300, 385		
<b>Bulldog, "Special," powder, Accidents with</b> ... ..	84		
<b>Bunker Coal, shipped coastwise</b> ... ..	193, 194		
<b>Bunkers Hill Colliery Accident</b> ... ..	86		
		<b>C.</b>	
		<b>CAITHNESS, Sandstone</b> ... ..	161, 267
		" Slate ... ..	161, 271
		" Persons employed ... ..	66, 161
		<b>Caledonian Railway, Coal traffic</b> ... ..	190
		<b>"Cabook," Output of Ceylon</b> ... ..	338
		<b>Calcium carbide, Output of Ontario</b> ... ..	332
		<b>Calc spar, Output of United Kingdom</b> ... ..	17, 252, 253
		" Iceland ... ..	392
		<b>Cambridgeshire, Chalk</b> ... ..	158, 174
		" Clay ... ..	158, 176
		" Gravel and sand ... ..	158, 212
		" Limestone ... ..	159, 252
		" Phosphate of lime ... ..	159, 260
		" Persons employed ... ..	65, 159
		<b>Cameroons, Salt springs</b> ... ..	386
		<b>Canada, Accidents</b> ... ..	302, 303, 329-333
		" Mineral output ... ..	301, 328
		" Persons employed ... ..	300, 329-331
		" ( <i>see also</i> British Columbia, Nova Scotia, and Ontario).	
		<b>Canal, Coal and coke traffic</b> ... ..	191, 192
		<b>Canary Islands, Minerals worked</b> ... ..	386
		<b>Cape Colony, Accidents</b> ... ..	302, 335-337
		" Mineral output ... ..	301, 334
		" Persons employed ... ..	300, 334
		<b>Carbonite, Accidents with</b> ... ..	84
		<b>Cardigan, Clay</b> ... ..	160, 176
		" Copper ore ... ..	160, 200, 201
		" Gravel and sand ... ..	160, 212
		" Lead ore ... ..	161, 241, 243
		" Sandstone ... ..	161, 267
		" Silver ... ..	241, 243
		" Slate ... ..	161, 271
		" Zinc ore ... ..	161, 284, 285
		" Persons employed ... ..	63, 66, 161
		<b>Carlrow Co., Igneous rocks</b> ... ..	162, 215
		" Limestone ... ..	163, 253
		" Persons employed ... ..	67, 163
		<b>Carmarthenshire, Chert and flint</b> ... ..	160, 175
		" Clay ... ..	160, 176
		" Coal ... ..	160, 181, 182, 184
		" Lead ore ... ..	241
		" Limestone ... ..	161, 252
		" Sandstone ... ..	161, 267
		" Slate ... ..	161, 271
		" Blast furnaces ... ..	227, 233
		" Copper smelters ... ..	207
		" Death-rate from accidents ... ..	95
		" Persons employed ... ..	57, 63, 66, 95, 161
		<b>Carnarvonshire, Clay</b> ... ..	160, 176
		" Copper ore ... ..	160, 200, 201
		" Gravel and sand ... ..	160, 212
		" Igneous rocks ... ..	160, 214
		" Lead ore ... ..	161, 241, 243
		" Limestone ... ..	161, 252
		" Manganese ore ... ..	161, 254
		" Sandstone ... ..	161, 267
		" Silver ... ..	241, 243
		" Slate ... ..	161, 271, 272
		" Zinc ore ... ..	161, 284, 285
		" Persons employed ... ..	60, 63, 66, 161



	Page.
Cavan and Leitrim Railway, Coal traffic...	190
Cavan Co., Limestone ... ..	163, 253
" Persons employed ... ..	67, 163
Celebes, Gold... ..	394
Celestine ( <i>see</i> Strontium sulphate).	
Cement, Output of:	
Algeria ... ..	363
Bavaria ... ..	412
Canada ... ..	328
France ... ..	401
Ontario ... ..	332
Quebec ... ..	333
Servia ... ..	451
Switzerland ... ..	460
Tunis ... ..	462
United States ... ..	469
Certificates of competency, Legislation as to qualifica-	
tions ... ..	117, 118
" " List of persons to whom	
granted in 1903...	121-130
Certificates of Service, do. do. ...	131
Ceylon, Accidents ... ..	302, 339
" Mineral output ... ..	301, 338
" Persons employed ... ..	300, 338
Chalk, Output of United Kingdom ...	10, 40, 139, 174, 306
" " Belgium ... ..	381
" " Denmark ... ..	392
" " France ... ..	401
Chalk Quarries, Fatal accidents ...	98, 99
" " Persons employed ... ..	64
Channel Islands, Persons employed ...	300, 339
" Quantity of Stone exported ...	339
Chanters Colliery Accident... ..	81
Cheddite, Accidents with ... ..	84, 103
Chert and flint, Output of United Kingdom ...	10, 40, 139, 175, 306
Cheshire, Clay ... ..	158, 176
" Coal... ..	158, 180, 184
" Gravel and sand ... ..	158, 212
" Limestone ... ..	159, 252
" Salt... ..	159, 264
" Sandstone ... ..	159, 267
" Coal traffic... ..	189
" Copper smelters ... ..	207
" Death-rate from accidents ... ..	95
" Persons employed... ..	57, 62, 65, 95, 159
" Zinc smelters ... ..	289
Cheshire Lines Railway, Salt conveyed ...	265
Chickensly Heath Colliery Accident ...	87
Chili, Mineral output ... ..	301, 387, 388
" Persons employed ... ..	300, 387
China, Mineral wealth ... ..	301, 389, 390
China clay and stone conveyed by rail and sea ...	177
" Output of Cornwall and Devon ...	176
" " Belgium ... ..	381
" " France ... ..	401
" " Japan ... ..	431
" " Russia ... ..	447
" " Spain ... ..	454
Christmas Island, Phosphate of lime ...	339
Chrome iron, Production in United Kingdom ...	228
Chromic iron ore, Output of:	
Australia... ..	309
Bosnia and Herzegovina ... ..	376
Canada ... ..	328
Greece ... ..	421
New Caledonia ... ..	436
New South Wales ... ..	311
New Zealand ... ..	353
Norway ... ..	437
Quebec ... ..	383
Russia ... ..	447
Turkey ... ..	463
United States ... ..	469

	Page.
Clackmannan, Clay ... ..	160, 176
" Coal ... ..	160, 181, 184
" Igneous rocks ... ..	160, 215
" Sandstone ... ..	161, 237
" Persons employed ... ..	57, 66, 161
Clare Co., Gravel and sand ... ..	162, 213
" Igneous rocks ... ..	162, 215
" Sandstone... ..	163, 268
" Persons employed ... ..	67, 163
Clay, Output of United Kingdom ...	10, 40, 139, 176, 177, 306
" Production of:	
Algeria ... ..	363
Australia... ..	309
Belgium ... ..	381
France ... ..	401
Japan ... ..	431
Russia ... ..	447
Spain ... ..	454
Tunis ... ..	462
United States ... ..	469
Victoria ... ..	318
" Exports from United Kingdom ...	178, 179
" Quarries, Fatal accidents ... ..	98, 99
" " Persons employed ... ..	64
Cleveland iron ore, Output of ...	217
Coal, Output of United Kingdom ...	10, 40, 139, 179-181, 185, 301, 306
" " in each Coal-field ... ..	182, 183
" " " County ...	158, 160, 162, 180, 181, 184
" Output of:	
Algeria ... ..	301, 363
Annam ... ..	424
Australia ... ..	301, 309
Austria ... ..	301, 369
Bavaria ... ..	412
Belgium ... ..	301, 381
Bosnia and Herzegovina ... ..	301, 376
British Columbia... ..	329
British Borneo ... ..	301, 322, 323
Bulgaria ... ..	301, 385
Canada ... ..	301, 328
Cape Colony ... ..	301, 334
Chili ... ..	301, 387
China ... ..	301, 389
Cuba ... ..	301, 392
Dutch Borneo ... ..	393
Dutch East Indies ... ..	301, 393
Formosa ... ..	301, 397
France ... ..	301, 400
German Empire ... ..	301, 406, 408
Greece ... ..	301, 421
Holland ... ..	301, 422
Hungary ... ..	301, 375
Illinois ... ..	470
India ... ..	301, 346
Indo-China ... ..	301, 424
Italy ... ..	301, 428
Japan ... ..	301, 431
Labuan ... ..	322
Mexico ... ..	301, 434
Natal ... ..	301, 350
New South Wales ... ..	311
New Zealand ... ..	301, 353
Nova Scotia ... ..	331
Ohio ... ..	470
Orange River Colony ... ..	301, 355
Pennsylvania ... ..	470
Peru ... ..	301, 439
Portugal... ..	301, 442
Prussia ... ..	414
Queensland ... ..	314
Rhodesia ... ..	301, 356
Roumania... ..	301, 444
Russia ... ..	301, 447
Sarawak ... ..	323

	Page.		Page
Coal, Output of— <i>cont.</i>		Comparative tables, 1878-1903, Persons employed,	
Saxony ... ..	418	Mineral output, Deaths from Accidents and Death	
Servia ... ..	301, 451	rates ... ..	38-45
Spain ... ..	301, 454	Congo Free State ... ..	391
Sumatra ... ..	395	Copper exported ... ..	203-205
Sweden ... ..	301, 458	" extracted from Burnt Cupreous pyrites	207, 239
Tasmania ... ..	317	" imported ... ..	206, 207
Tong-King ... ..	424	" obtained from British ores ... ..	139, 200, 201
Transvaal ... ..	301, 358	"       "       Foreign ores ... ..	207
Turkey ... ..	301, 463	" Price in the London market ... ..	202, 203
United States ... ..	301, 469	" Smelters in United Kingdom ... ..	207, 208
Victoria ... ..	318	Copper or Copper ore, Output of :	
Western Australia ... ..	320	United Kingdom 10, 40, 139, 200-202, 301, 306, 307	
West Virginia ... ..	470	Algeria ... ..	301, 363
" Output per person employed ... 7, 14, 15, 182, 183		Argentine Republic ... ..	301, 366
" exported from United Kingdom ... 185, 197-199		Australia ... ..	301, 309
" imported into       "       " ... ..	196	Austria ... ..	301, 369
" Average price in the several Coal-fields ... 183		Bolivia ... ..	301, 383
"       "       in the several Counties ... 180, 181, 184		Bosnia and Herzegovina ... ..	301, 376
" Average Price in the London market ... 186, 187		British Columbia ... ..	329
"       "       at the pit's mouth ... 180, 181, 183, 184,		Canada ... ..	301, 328
"       "       at the several Ports ... ..	187	Cape Colony ... ..	301, 324
" Quantity retained for home consumption ... ..	185	Chili ... ..	301, 387
"       "       per head of population ... ..	185	Corea ... ..	301, 391
" shipped coastwise ... ..	193-195, 199	France ... ..	301, 400
"       "       for use of steamers ... ..	185, 199	German Empire .. ..	301, 406
" and coals conveyed by railway, canal, &c. ... 188-192		Hayti ... ..	301, 422
" used in the blast furnaces of United Kingdom 227,		Honduras ... ..	301, 424
229-234		Hungary ... ..	301, 375
Coal-cutting Machines :		India ... ..	301, 346
Number in use in the United Kingdom ... 111, 112		Italy ... ..	301, 428
"       "       United States ... ..	466	Japan ... ..	301, 431
Quantity of Coal obtained in United Kingdom by		Mexico ... ..	301, 434
use of ... ..	111, 112	New Caledonia ... ..	301, 436
Quantity of Coal obtained in United States by use of		Newfoundland ... ..	301, 351
465		New South Wales ... ..	311
Coal-dust ( <i>see</i> Accidents).		New Zealand ... ..	301, 353
Coal-fields of United Kingdom, List of ... ..	54	Norway ... ..	301, 437
" Fatal accidents ... ..	91-94	Ontario ... ..	332
" Mineral output ... ..	182, 183	Persia ... ..	301, 438
" Persons employed ... ..	55, 56, 183	Peru ... ..	301, 439
Coal mines, definition ... ..	53	Portugal ... ..	301, 442
" Fatal accidents ... ..	72	Prussia ... ..	414
" Mineral output from ... ..	182-184	Quebec ... ..	333
" Persons employed at ... ..	54-58, 183, 184	Queensland ... ..	314
" Regulation Act ... ..	5	Russia ... ..	301, 448
"       "       Amendment Act, 1903 117, 118		Servia ... ..	301, 451
Cobalt and Nickel ores, Output of :		South Australia ... ..	316
United Kingdom ... ..	41, 199	Spain ... ..	301, 454
Australia ... ..	309	Sweden ... ..	301, 458
Bolivia ... ..	383	Tasmania ... ..	317
Chili ... ..	388	Turkey ... ..	301, 463
German Empire ... ..	406	United States ... ..	301, 470
New Caledonia ... ..	436	Victoria ... ..	318
New South Wales ... ..	311	Western Australia ... ..	320
Prussia ... ..	414	Copper precipitate, Production of :	
Russia ... ..	448	United Kingdom ... ..	10, 40, 139, 200-202, 306
Saxony ... ..	418	Bolivia ... ..	383
United States ... ..	469	Chili ... ..	387
Western Australia ... ..	320	Portugal ... ..	442
Cochin China, Output of jet and salt ... ..	424	Coprolites ( <i>see</i> Phosphate of lime)	
Coignant Colliery Accident ... ..	86	" conveyed by railway ... ..	260
Coke exported from United Kingdom ... 185, 197-199		"       "       conveyed by railway ... ..	261
" shipped coastwise ... ..	192-195, 199	Coral, Production of Ceylon ... ..	338
" Output of :		Corea, Mineral Output ... ..	301, 391
Australia ... ..	309	" Persons employed ... ..	300, 391
British Columbia ... ..	329	Cork Co., Barytes ... ..	162, 170, 171
Canada ... ..	328	" Clay ... ..	162, 177
New South Wales ... ..	311	" Copper ore ... ..	162, 200, 201
Nova Scotia ... ..	331	" Gravel and sand ... ..	162, 213
Colombia, Mineral output ... ..	301, 390	" Limestone ... ..	163, 253
Colorado, Accidents ... ..	471, 472	" Sandstone ... ..	163, 268
" Persons employed ... ..	468	" Slate ... ..	163, 271
" Coal cutting machines ... ..	465	" Persons employed ... ..	63, 67, 163
Commonwealth of Australia ( <i>see</i> Australia).		Cornwall, Arsenic ... ..	159, 167
		" Chert and flint ... ..	158, 175
		" China clay and stone ... ..	176



## Cornwall—cont.

## Page.

" Clay ... ..	158, 176
" Copper ore ... ..	158, 200, 201
" Gravel and sand ... ..	158, 212
" Igneous rocks ... ..	158, 214
" Lead ore ... ..	159, 241, 242
" Limestone ... ..	159, 252
" Mica ... ..	159, 255
" Ochre ... ..	159, 256, 257
" Sandstone ... ..	159, 267
" Silver ... ..	241, 242
" Silver ore ... ..	159, 268
" Slate ... ..	159, 271, 272
" Tin ore ... ..	159, 276-278
" Uranium ore ... ..	159, 282
" Wolfram ... ..	159, 283
" Arsenic refiners ... ..	168
" Death-rate from accidents ... ..	95
" Tin smelters ... ..	282
" Persons employed ... ..	62, 65, 95, 159
" Prevalence of phthisis amongst miners ... ..	116

## Corundum, Output of :

Canada ... ..	328
Ontario ... ..	332
United States ... ..	469

## Costa Rica, Output of Gold ... .. 301, 391

## County summaries, Output of Mines under the Coal Mines Act ... .. 142-145

" " Output of Mines under the Metalliferous Mines Act ... ..	146-149
" " Output of Quarries ... ..	150-155
" " Output of Shallow workings, Brine wells, &c. ... ..	156, 157
" " Output of all Mines, Quarries, &c. ... ..	158-163
" " Persons employed in Coal Mines ... ..	57, 58
" " " " Iron Mines ... ..	59, 60
" " " " Other Mines ... ..	62, 63
" " Persons employed under the Coal Mines Act ... ..	143, 145
" " " employed under the Metalliferous Mines Act ... ..	147, 149
" " " employed under the Quarries Act ... ..	65-67, 151, 153, 155
" " " employed under all three Acts ... ..	159, 161, 163

## " " Death-rates ... .. 95, 96

## Coventry Canal, coal traffic ... .. 191

## Crocidolite, Production of Cape Colony ... .. 334

## Cryolite, Output of Greenland ... .. 392

## Cuba, Mineral output ... .. 301, 391, 392

## Cumberland, Barytes ... .. 158, 169, 170

" Clay ... ..	158, 176
" Coal ... ..	158, 180, 184
" Gravel and sand ... ..	158, 212
" Gypsum ... ..	158, 213
" Igneous rocks ... ..	158, 214
" Iron ore ... ..	158, 218-221
" Lead ore ... ..	159, 241, 242
" Limestone ... ..	159, 252
" Sandstone ... ..	159, 267
" Silver ... ..	241, 242
" Slate ... ..	159, 271, 272
" Zinc ore ... ..	159, 284, 285
" Blast furnaces ... ..	227, 229
" Coal traffic ... ..	189, 190
" Death-rate from accidents ... ..	95
" Persons employed ... ..	57, 59, 62, 65, 95, 159

## Supracious iron pyrites, Output of :

Canada ... ..	328
Italy ... ..	428
Norway ... ..	437
Portugal ... ..	441
Saxony ... ..	419
Spain ... ..	455

## Supracious iron pyrites, imported ... .. 238, 239

## " " " treated at the Metal Extraction Works ... .. 239

## Canaçao, Minerals worked ... .. 396

## Cyprus, Mineral output ... .. 301, 340

## D.

## Page.

## DEATHS from Accidents at Mines in United Kingdom

7, 9, 23, 25, 42, 43, 67-96

" " at Quarries in United Kingdom

7, 9, 27, 96-106

" " (see also under "Accidents").

Death-rates in each inspection-district ... .. 34

" in the several Coal-fields ... .. 91

" in the principal Mining Counties ... .. 95, 96

" in all Mines per 1000 persons employed

from 1894-1903 ... .. 69

" " " 1873-1903 ... .. 70

" " " 1851-1903 ... .. 119, 120

" per million tons of mineral raised ... .. 44, 70

" Mines under the Coal Mines Act ... .. 8, 34, 44

" " Metalliferous Mines Act ... .. 8, 34, 45

" of persons under and above 16 years

of age ... .. 8, 113, 114

" Quarries under the Quarries Act ... .. 8, 34

" in different kinds of Quarries ... .. 98

" from accidents at Mines :

United Kingdom ... ..	8, 34, 69-71, 303, 307
Algeria ... ..	303, 364
Australia ... ..	303, 310
Austria ... ..	303, 370
Belgium ... ..	303, 382
Bohemia ... ..	374
Bosnia and Herzegovina ... ..	303, 377
British Columbia ... ..	303, 330
British Guiana ... ..	303, 325
Bulgaria ... ..	303, 385
Cape Colony ... ..	303, 395
Ceylon ... ..	303, 339
Federated Malay States ... ..	303, 342
France ... ..	303, 402, 403
German Empire ... ..	303, 409, 410
Gold Coast ... ..	303, 343
Greece ... ..	421
Holland ... ..	303, 423
Hungary ... ..	303, 375
India ... ..	303, 348, 349
Italy ... ..	303, 428
Japan ... ..	303, 431
Kimberley ... ..	303, 335
Mexico ... ..	303, 434
Natal ... ..	303, 350
Newfoundland ... ..	303, 351
New South Wales ... ..	303, 312
New Zealand ... ..	303, 353
Nova Scotia ... ..	303, 331
Ontario ... ..	303, 332
Portugal ... ..	303, 442
Prussia ... ..	416
Quebec ... ..	303, 333
Queensland ... ..	303, 315
Russia ... ..	303, 449
Saxony ... ..	419
Servia ... ..	303, 451
Spain ... ..	303, 456
Sweden ... ..	303, 458
Switzerland ... ..	303, 461
Tasmania ... ..	303, 317
Transvaal ... ..	303, 358
United States ... ..	303, 471, 472
Victoria ... ..	303, 319
Western Australia ... ..	303, 321
" from accidents at Petroleum Wells :	
Austria ... ..	370
" from accidents at Quarries :	
United Kingdom ... ..	8, 34, 97, 98, 303, 307



				Page.
Death-rates from accidents at Quarries—cont.				
Algeria	...	...	...	303, 364
Belgium	...	...	...	303, 382
France	...	...	...	303, 402
Germany	...	...	...	303, 411
India	...	...	...	348
Italy	...	...	...	303, 429
Newfoundland	...	...	...	303, 351
Russia	...	...	...	303, 449
Switzerland	...	...	...	303, 461
Denmark, Mineral output	...	...	...	392
Denbighshire, Chert and flint	...	...	...	160, 175
" Clay	...	...	...	160, 176
" Coal	...	...	...	160, 181, 184
" Copper	...	...	...	200, 201
" Gravel and sand	...	...	...	160, 212
" Igneous rocks	...	...	...	160, 214
" Lead ore	...	...	...	161, 241, 244
" Limestone	...	...	...	161, 262
" Sandstone	...	...	...	161, 267
" Silver	...	...	...	241, 244
" Slate	...	...	...	161, 271, 272
" Zinc ore	...	...	...	161, 284, 286
" Blast furnaces	...	...	...	227, 233
" Coal traffic	...	...	...	191
" Death-rate from accidents	...	...	...	95
" Persons employed	...	...	...	57, 63, 66, 95, 161
" Zinc smelters	...	...	...	289
Derbyshire, Barytes	...	...	...	158, 169, 170
" Chert and flint	...	...	...	158, 175
" Clay	...	...	...	158, 176
" Coal	...	...	...	158, 180, 184
" Fluorspar	...	...	...	159, 209
" Gravel and sand	...	...	...	158, 212
" Gypsum	...	...	...	158, 213
" Iron ore	...	...	...	158, 218-221
" Iron pyrites	...	...	...	158, 237
" Lead ore	...	...	...	159, 241, 242, 244
" Limestone	...	...	...	159, 252
" Manganese ore	...	...	...	159, 254
" Ochre	...	...	...	159, 256, 257
" Sandstone	...	...	...	159, 267
" Zinc ore	...	...	...	159, 284, 285
" Blast furnaces	...	...	...	227, 229
" Coal traffic	...	...	...	188, 189
" Death-rate from accidents	...	...	...	95
" Lead smelters	...	...	...	250
" Persons employed	...	...	...	57, 59, 62, 65, 95, 159
Desilverizers in the United Kingdom	...	...	...	250, 251
Detonators, Accidents with	...	...	...	84
Devonshire, Arsenic	...	...	...	159, 167, 168
" Arsenical pyrites	...	...	...	159, 166
" Barytes	...	...	...	158, 169
" Chert and flint	...	...	...	158, 175
" China clay	...	...	...	176
" Clay	...	...	...	158, 176
" Copper ore	...	...	...	200
" Gravel and sand	...	...	...	158, 212
" Igneous rocks	...	...	...	158, 214
" Limestone	...	...	...	159, 252
" Manganese ore	...	...	...	159, 254
" Mica	...	...	...	159, 255
" Ochre	...	...	...	159, 256, 257
" Pottery clay	...	...	...	176
" Sandstone	...	...	...	159, 267
" Slate	...	...	...	159, 271
" Tin ore	...	...	...	159, 276, 277
" Wolfram	...	...	...	159, 283
" Arsenic refiners	...	...	...	168
" Persons employed	...	...	...	59, 62, 65, 159
Diagram, Annual Death-rates from various causes of				
Accidents per 1,000 persons employed at				
Mines, 1873-1903				68
Deaths per 1,000,000 tons of mineral raised,				
1873-1903				70

				Page.
Diagram, Death-rates from Accidents per 1,000 persons				
employed underground and aboveground at				
all Mines, 1873-1903				70
" Death-rates from Accidents underground,	...	...	...	71
1873-1903	...	...	...	
" Death-rates from Accidents from falls of	...	...	...	79
ground, 1873-1903	...	...	...	
" Death-rates from Shaft Accidents, 1873-1903	...	...	...	81
" Death-rates from Miscellaneous underground	...	...	...	88
Accidents, 1873-1903	...	...	...	
" Death-rates of Men and Boys employed at	...	...	...	113
Mines	...	...	...	
" Death-rates from Accidents at Quarries and at	...	...	...	97
Mines, 1896-1903	...	...	...	
" Number of Persons employed and Number of	...	...	...	68
Deaths from Accidents from all causes at	...	...	...	
Mines, 1851-1903	...	...	...	
" Output and Export of Coal, 1873-1903	...	...	...	179
" Output and Import of Iron ore, 1873-1903	...	...	...	217
" Proportion of deaths from different classes	...	...	...	73
of Accidents, 1903	...	...	...	
" Prices of Coal and Iron, 1873-1903	...	...	...	290
" Prices of Copper, Lead, Tin, and Zinc, 1873-	...	...	...	290
1903	...	...	...	
Diamonds, Output of :				
Australia	...	...	...	309
Borneo, Dutch	...	...	...	303
Brasil	...	...	...	384
British Guiana	...	...	...	324
Cape Colony	...	...	...	334
Orange River Colony	...	...	...	355
New South Wales	...	...	...	311
Transvaal	...	...	...	358
Discipline of miners, Remarks on laxity of				109
District statistics of persons employed, Output and				
accidents				11-35
Districts, Mines inspection, List of				46, 47
Donegal Co., Bog ore	...	...	...	163
" Igneous rocks	...	...	...	162, 215
" Limestone	...	...	...	163, 253
" Sandstone	...	...	...	163, 268
" Persons employed	...	...	...	67, 163
Dorsetshire, Chalk	...	...	...	158, 174
" Clay	...	...	...	158, 176
" Gravel and sand	...	...	...	158, 212
" Limestone	...	...	...	159, 252
" Pottery clay	...	...	...	176
" Sandstone	...	...	...	159, 267
" Persons employed	...	...	...	62, 65, 159
Down Co., Gravel and sand	...	...	...	162, 213
" Igneous rocks	...	...	...	162, 215
" Limestone	...	...	...	163, 253
" Sandstone	...	...	...	163, 268
" Persons employed	...	...	...	63, 67, 163
Dublin Co., Clay	...	...	...	162, 177
" Gravel and sand	...	...	...	162, 212
" Igneous rocks	...	...	...	162, 215
" Limestone	...	...	...	163, 253
" Sandstone	...	...	...	163, 268
" Persons employed	...	...	...	67, 163
Dudley Wood Colliery Accident	...	...	...	68, 8
Dumbarton, Clay	...	...	...	160, 174
" Coal	...	...	...	160, 181, 184
" Gravel and sand	...	...	...	160, 212
" Igneous rocks	...	...	...	160, 215
" Iron ore	...	...	...	160, 218, 219
" Limestone	...	...	...	161, 253
" Sandstone	...	...	...	161, 267
" Slate	...	...	...	161, 271
" Coal traffic	...	...	...	190, 192
" Death-rate from Accidents	...	...	...	95
" Persons employed	...	...	...	57, 60, 63, 66, 95, 161
Dumfries, Clay	...	...	...	160, 176
" Coal	...	...	...	160, 181, 184
" Igneous rocks	...	...	...	160, 215
" Lead ore	...	...	...	161, 241, 244
" Limestone	...	...	...	161, 253
" Sandstone	...	...	...	161, 268

	Page.
... ..	241, 244
ore ... ..	161, 284, 286
traffic ... ..	190
ons employed ... ..	57, 63, 66, 161
... ..	158, 169, 170
... ..	158, 176
... ..	158, 180, 184
spar ... ..	159, 209
l and sand ... ..	158, 212
as rocks ... ..	158, 214
re ... ..	158, 218, 220, 221, 223
ore ... ..	159, 241, 242
tone ... ..	159, 252
... ..	159, 264
tone ... ..	159, 267
... ..	241, 242
furnaces ... ..	227, 229
traffic ... ..	189
r smelters ... ..	208
rate from Accidents ... ..	95
smelters ... ..	250
as employed ... ..	57, 59, 62, 65, 95, 159
rock-drills ... ..	116
ies, Mineral output ... ..	301, 393-395
Persons employed ... ..	300, 393, 395
Output of Gold ... ..	301, 395
dies, Mineral output ... ..	301, 396
dents with ... ..	81, 103

## E.

Colliery Accident ... ..	82
Output of Gold and Silver ... ..	301, 396
Clay ... ..	160, 176
Coal ... ..	160, 181, 184
Gravel and sand ... ..	160, 212
Igneous rocks ... ..	160, 215
Iron ore ... ..	160, 218, 219
Limestone ... ..	161, 253
Oil shale ... ..	161, 258
Sandstone ... ..	161, 268
Coal traffic ... ..	190
Death-rate from accidents ... ..	95
Persons employed ... ..	57, 63, 66, 95, 161
wealth ... ..	397
idents caused by ... ..	76, 77, 87
cautionary measures ... ..	87, 88
idents with ... ..	84
rocks ... ..	160, 215
e ... ..	161, 268
mployed ... ..	66, 161
ut of Colombia ... ..	390
of: ... ..	412
... ..	421
... ..	464
... ..	469
Boys at Mines ... ..	113-115
Children Act, 1903 ... ..	118
ary of mineral output ... ..	140
ines and Salt Workings ... ..	397
... ..	158, 174
l flint ... ..	158, 175
... ..	158, 176
ad sand ... ..	158, 212
mployed ... ..	65, 159
for Managers' Certificates, List of ... ..	46, 47

	Page.
Explosions of fire-damp or coal-dust in the Mines of the United Kingdom, Accidents from ... ..	22, 23, 28, 29, 35, 73-77
" Accidents from, classified according to kind of Mine and cause ... ..	74, 75
" of fire-damp or coal-dust in the Mines of: ... ..	
Austria ... ..	373
Prussia ... ..	417
(See also under "Accidents.")	
Explosives, Accidents with, at Mines ... ..	22-25, 28-31, 83-85
" " Quarries ... ..	26, 27, 32, 33, 102-104
" Nitro-glycerine compounds, Precautions as to use ... ..	104
(See also under "Accidents.")	
" in Coal Mines Order, remarks ... ..	111
Exports of Clay ... ..	178, 179
" Coal, coke, &c. ... ..	185, 197-199
" Copper and copper ore ... ..	203-205
" Gold bullion and specie ... ..	211
" Iron ore ... ..	225, 226
" Iron and steel ... ..	236, 237
" Lead and lead ore ... ..	248, 249
" Patent fuel ... ..	185, 197-199
" Quicksilver ... ..	263
" Roofing slates ... ..	274, 275
" Salt ... ..	266
" Silver bullion and specie ... ..	269
" Tin ... ..	281
" Zinc and zinc ore ... ..	287, 288

## F.

FACTORY AND WORKSHOP ACTS, Prosecutions ... ..	110
Falls of Ground, Accidents from, in Mines ... ..	22-25, 28-31, 35, 73, 77-80
" " " Quarries ... ..	26, 27, 32, 33, 99, 101, 102
(See also under "Accidents.")	
Faroe Islands, Coal deposits ... ..	392
Fatal Accidents (see "Accidents, Fatal").	
Federated Malay States, Accidents ... ..	302, 342
" " Mineral output ... ..	301, 341, 342
" " Persons employed ... ..	300, 341
Felspar, Output of: ... ..	
Bavaria ... ..	412
Canada ... ..	328
Norway ... ..	437
Ontario ... ..	332
Quebec ... ..	333
Sweden ... ..	458
United States ... ..	469
Fermanagh Co., Limestone ... ..	163, 253
" Sandstone ... ..	163, 269
" Persons employed ... ..	67, 163
Ferndale No. 5 Colliery Accident ... ..	76
Ferro-manganese (see Iron) ... ..	228
Fife, Clay ... ..	160, 176
" Coal ... ..	160, 181, 184
" Gravel and sand ... ..	160, 212
" Igneous rocks ... ..	160, 215
" Iron ore ... ..	160, 218, 219
" Limestone ... ..	161, 253
" Sandstone ... ..	161, 268
" Blast furnaces ... ..	227, 233
" Coal traffic ... ..	190
" Death-rate from Accidents ... ..	95
" Persons employed ... ..	57, 63, 66, 95, 161
Fireclay, Output of: ... ..	
United Kingdom ... ..	15
Coalfields ... ..	182

	Page
<b>Fireclay, Output of—cont.</b>	
Australia...	309
Bavaria ...	412
Canada ...	328
Cape Colony ...	334
France ...	401
New South Wales ...	311
Sweden ...	458
Tunis ...	462
<b>Fires underground in Mines, Accidents</b> ...	86
<b>Fire-damp or coal-dust, Accidents from</b> ...	22, 23, 28, 29, 35, 73-77
<b>Fire-damp, Outbursts of</b> ...	88
<b>Flags, Output of :</b>	
Algeria ...	363
Belgium ...	381
Canada ...	328
France ...	401
Quebec ...	333
Tunis ...	462
<b>Flint and chert, Output of :</b>	
United Kingdom ...	10, 40, 139, 175
Belgium ...	381
France ...	401
United States ...	469
<b>Flintshire, Chert and flint</b> ...	160, 175
" Clay ...	160, 176
" Coal ...	160, 181, 184
" Gravel and sand ...	160, 212
" Iron ore ...	160, 218, 220, 222
" Lead ore ...	161, 241, 244
" Limestone ...	161, 252
" Oil shale ...	161, 258
" Sandstone ...	161, 267
" Silver ...	241, 244
" Zinc ore ...	161, 284, 286
" Blast furnaces ...	227, 233
" Death-rate from Accidents ...	96
" Lead smelters ...	250
" Persons employed ...	57, 60, 63, 66, 96, 161
<b>Fluorspar, Output of :</b>	
United Kingdom ...	10, 40, 139, 209, 210, 306
Bavaria ...	412
France ...	401
Saxony ...	419
Spain ...	455
United States ...	469
<b>Forfar, Clay</b> ...	160, 176
" Gravel and sand ...	160, 212
" Igneous rocks ...	160, 215
" Sandstone ...	161, 268
" Persons employed ...	66, 161
<b>Formosa, Mineral output</b> ...	397
<b>Forth and Clyde Canal, Coal and Coke traffic</b> ...	192
<b>Fossil fuel, Production of Italy</b> ...	428
<b>Fracturite, Accidents with</b> ...	84
France, Accidents ...	302, 402, 403
" Mineral output ...	301, 400-402
" Persons employed ...	300, 399, 400
<b>French Guiana, Mineral output</b> ...	301, 403
<b>Fuller's earth, Output of :</b>	
United Kingdom ( <i>see</i> Clay) ...	176
France ...	401
Morocco ...	435
United States ...	469
<b>Furnaces, Blast, in United Kingdom, particulars of</b> ...	229-234
<b>Farness Railway, Coal carried by</b> ...	188

## G.

	Page
<b>GALENA (<i>see</i> Lead ore)</b> ...	240-245
<b>Galway Co., Igneous rocks</b> ...	162, 215
" Limestone ...	163, 263
" Sandstone ...	163, 268
" Persons employed ...	67, 163
<b>Ganister (<i>see</i> Sandstone)</b> ...	267, 268
<b>Garnet, Output of German East Africa</b> ...	403
" Spain ...	455
" United States ...	469
<b>Gas, Carburetted hydrogen, Output of Italy</b> ...	428
<b>Gelatine-dynamite, Accidents with</b> ...	84, 103
<b>Gelignite, Accidents with</b> ...	84, 103
<b>Geloxite, Accidents with</b> ...	84
<b>General remarks :</b>	
Ambulance work ...	117
Ankylostomiasis ...	115
Coal cutting machinery ...	111-113
Employment of boys at mines ...	113-115
Explosives in Coal Mines Order ...	111
Hydraulic Wedge or Cartridge ...	117
Hygiene of the Mines ...	116, 117
Legislation ...	117, 118
<b>General Summary of the Mineral Output of :</b>	
United Kingdom for 1902 and 1903 ...	10, 139
British Empire " " ...	301, 306, 307
Foreign countries " " ...	301
<b>German East Africa, Mineral deposits</b> ...	403
" South-West Africa, Minerals found in ...	420
" Empire, Accidents ...	302, 409-411
" " Mineral output ...	301, 406-409
" " Persons employed ...	300, 405, 406
<b>Glamorganshire, Clay</b> ...	160, 176
" Coal ...	160, 181, 182, 184
" Gravel and sand ...	160, 212
" Iron ore ...	160, 218, 219, 223
" Limestone ...	161, 252
" Sandstone ...	161, 267
" Arsenic refiners ...	168
" Blast furnaces ...	227, 233
" Coal traffic ...	189
" Copper smelters ...	208
" Death-rate from Accidents ...	96
" Lead smelters ...	250
" Persons employed ...	57, 60, 63, 66, 96, 161
" Tin smelters ...	282
" Zinc smelters ...	289
<b>Glasgow and South Western Railway, Coal carried</b> ...	190
<b>Gloucestershire, Clay</b> ...	158, 176
" Coal ...	158, 180, 184
" Gravel and sand ...	158, 212
" Iron ore ...	158, 218, 220, 221
" Limestone ...	159, 252
" Ochre ...	159, 256, 257
" Sandstone ...	159, 267
" Strontium sulphate ...	159, 275
" Coal traffic ...	188, 189
" Death-rate from Accidents ...	95
" Lead smelters ...	250
" Persons employed ...	57, 59, 62, 65, 95, 154
" Zinc smelters ...	284
<b>Gold bullion and specie exported and imported</b> ...	211
" extracted from foreign cupreous pyrites ...	211, 231
" ore, Imported ...	211
<b>Gold or Gold quartz, Output of :</b>	
United Kingdom ...	10, 40, 139, 210, 211, 301, 306, 307
Abyssinia ...	301, 306
Argentine Republic ...	301
Aruba ...	301
Australia ...	301, 306



old or Gold quartz, Output of— <i>cont.</i>	Page.	Granite, Output of— <i>cont.</i>	Page.
Austria ... ..	301, 369	Bavaria ... ..	412
Bolivia ... ..	301, 383	British Guiana ... ..	324
Brazil ... ..	301, 384	Canada ... ..	328
British Borneo ... ..	301, 323	Ceylon ... ..	338
British Columbia ... ..	329	Newfoundland ... ..	351
British Guiana ... ..	301, 324	Quebec ... ..	333
British New Guinea ... ..	301, 325	Queensland ... ..	314
Canada ... ..	301, 328	Graphite, Output of :	
Cape Colony ... ..	301, 334	Australia... ..	309
Chili ... ..	301, 388	Austria ... ..	369
China ... ..	301, 389, 390	Bavaria ... ..	412
Colombia... ..	301, 390	Canada ... ..	328
Congo Free State ... ..	301, 391	Ceylon ... ..	338
Corea ... ..	301, 391	France ... ..	400
Costa Rica ... ..	301, 391	German Empire... ..	466
Dutch Borneo ... ..	393	India ... ..	346
Dutch East Indies ... ..	301, 393, 395	Italy ... ..	428
Dutch Guiana ... ..	301, 395	Japan ... ..	431
Dutch West Indies ... ..	301, 396	Mexico ... ..	434
Ecuador ... ..	301, 396	Ontario ... ..	332
Federated Malay States ... ..	301, 341	Quebec ... ..	333
Formosa ... ..	301, 397	Spain ... ..	455
France ... ..	301, 400	Sweden ... ..	458
French Guiana ... ..	301, 403	United States ... ..	469
German Empire... ..	301, 407	Western Australia ... ..	320
Gold Coast ... ..	301, 343	Gravel and sand, Output of :	
Honduras ... ..	301, 424	United Kingdom ... ..	10, 40, 139, 212, 213, 306
Hungary... ..	301, 375	Algeria ... ..	363
India ... ..	301, 346	Belgium ... ..	381
Italy ... ..	301, 428	Canada ... ..	328
Ivory Coast ... ..	429	Ceylon ... ..	338
Japan ... ..	301, 431	France ... ..	401
Madagascar ... ..	301, 433	Tunis ... ..	462
Mexico ... ..	301, 434	Gray, F. A., Remarks on Ambulance knowledge amongst	
Natal ... ..	301, 350	miners ... ..	117
Newfoundland ... ..	301, 351	Great Central Railway, Coal and Coke carried ... ..	188
New South Wales ... ..	311	Great Eastern Railway, Coprolites conveyed ... ..	261
New Zealand ... ..	301, 353	Great Northern Railway, Coal carried ... ..	188
Nicaragua ... ..	301, 436	" " " Coprolites conveyed ... ..	261
Norway ... ..	301, 437	" " " Salt conveyed, ... ..	266
Nova Scotia ... ..	331	Great Southern and Western Railway, Coal traffic ... ..	190
Ontario ... ..	332	Great Western Railway, Coal and Coke carried... ..	188
Panama ... ..	301, 438	Greece, Accidents ... ..	421
Peru ... ..	301, 439	" Mineral output ... ..	301, 421
Porto Rico ... ..	301, 440	" Persons employed ... ..	301, 420
Portugal ... ..	301, 442	Greenland, Output of Cryolite ... ..	392
Portuguese East Africa ... ..	443	" Persons employed ... ..	300, 392
Prussia ... ..	414	Grindstones, Output of :	
Quebec ... ..	333	Canada ... ..	328
Queensland ... ..	314	Nova Scotia ... ..	331
Rhodesia ... ..	301, 356	United States ... ..	469
Russia ... ..	301, 448	Guatemala, Mineral deposits ... ..	422
Sarawak ... ..	323	Gum, Kauri, Production of New Zealand ... ..	353
Senegal ... ..	301, 450	Gunpowder Accidents with ... ..	84, 103
Servia ... ..	301, 451	Gypsum, Output of	
Siam ... ..	301, 452	United Kingdom ... ..	10, 40, 139, 213, 214, 306
South Australia... ..	316	Algeria ... ..	363
Spain ... ..	301, 455	Australia... ..	309
Sumatra... ..	395	Bavaria ... ..	413
Tasmania ... ..	317	Canada ... ..	328
Transvaal ... ..	301, 358	Cyprus ... ..	340
Turkey ... ..	301, 463	France ... ..	401
United States ... ..	301, 470	Greece ... ..	421
Uruguay ... ..	301, 473	Nova Scotia ... ..	331
Venezuela ... ..	301, 474	Ontario ... ..	332
Victoria ... ..	318	Switzerland ... ..	460
Western Australia ... ..	320	United States ... ..	469
Gold Coast, Accidents ... ..	302, 343	Victoria ... ..	318
" Quantity of Gold exported ... ..	301, 343		
" Persons employed ... ..	300, 343		
Grand Canal, Coal traffic ... ..	192		
Granite, Output of :			
United Kingdom ( <i>included with Igneous rocks</i> ) ... ..	214, 215		
Australia .. ..	309		

## H.

	Page.
HADDINGTON, Clay ... ..	160, 176
" Coal ... ..	160, 181, 184
" Gravel and sand ... ..	160, 212
" Igneous rocks ... ..	160, 215
" Limestone ... ..	161, 253
" Sandstone ... ..	161, 268
" Persons employed ... ..	57, 66, 161
Haldane, Dr. J. S., Inquiry into health of Cornish Miners ... ..	116
Hall, H., Suggestions for preventing Accidents by falls at Quarries ... ..	102
Hampshire, Chalk ... ..	158, 174
" Chert and flint ... ..	158, 175
" Clay ... ..	158, 176
" Gravel and sand ... ..	158, 212
" Sandstone ... ..	159, 267
" Persons employed ... ..	65, 159
Haulage, Underground Accidents 22, 23, 28-31, 35, 63, 66, 87	
Hayti, Mineral deposits ... ..	422
Hematite iron, Production of the blast furnaces ... ..	228
Herefordshire, Clay ... ..	158, 176
" Gravel and sand ... ..	158, 212
" Igneous rocks ... ..	158, 214
" Limestone ... ..	159, 252
" Sandstone ... ..	159, 267
" Persons employed ... ..	65, 159
Hertfordshire, Chalk ... ..	158, 174
" Chert and flint ... ..	158, 175
" Clay ... ..	158, 176
" Gravel and sand ... ..	158, 212
" Persons employed ... ..	62, 65, 159
Holland, Accidents ... ..	302, 423
" Mineral output ... ..	301, 423
" Persons employed ... ..	300, 422, 423
Holytown Colliery Accident ... ..	87
Honduras, Mineral output ... ..	301, 424
Honestones, Production of Belgium ... ..	381
Hull and Barnsley Railway, Coal and coke carried ... ..	188
Hungary, Accidents ... ..	302, 375
" Mineral output ... ..	301, 374, 375
" Persons employed ... ..	300, 374
Huntingdonshire, Clay ... ..	158, 176
" Persons employed ... ..	65, 159
Hydraulic wedges or cartridges ... ..	117
Hygiene of Mines ... ..	116, 117

## I.

ICELAND, Mineral deposits and output ... ..	392
Igneous rocks, Output of United Kingdom ... ..	10, 40, 139, 214, 215, 306
" Quarries, Accidents ... ..	98, 99
" Persons employed ... ..	64
Illinois, Accidents in Coal Mines ... ..	471
" Output of Coal ... ..	467, 470
" Persons employed ... ..	468
" Coal-cutting machines ... ..	465
Imports of Coal ... ..	196
" Copper and copper ore ... ..	206, 207
" Gold and gold ore ... ..	211
" Iron ore ... ..	224-226
" Iron pyrites ... ..	238, 239

Imports of Lead and lead ore ... ..	
" Manganese ore ... ..	
" Petroleum ... ..	
" Phosphate of lime ... ..	
" Quicksilver ... ..	
" Silver bullion and specie ... ..	
" Silver ore ... ..	
" Tin and tin ore ... ..	
" Zinc and zinc ore ... ..	
Inclined and engine planes, Accidents ... ..	32, 33
India, Fatal Accidents ... ..	302
" Mineral output ... ..	301
" Persons employed ... ..	
" Legislation ... ..	
Indo-China, Mineral output ... ..	
Indiana, Accidents in Coal Mines ... ..	
" Persons employed ... ..	
" Coal-cutting machines ... ..	
Indian Territory, Accidents in Coal Mines ... ..	
" Persons employed ... ..	
" Coal-cutting machines ... ..	
Infusorial earth, Output of Australia ... ..	
" " United States ... ..	
" " Victoria ... ..	
Inspection districts for Mines and Quarries ... ..	
Inspectors of Mines, List of ... ..	
Inverness, Gravel and sand ... ..	
" Limestone ... ..	
" Sandstone ... ..	
" Persons employed ... ..	
Iodine, Production of Chili ... ..	
" " Java (Dutch East Indies) ... ..	
Iowa, Accidents in Coal Mines ... ..	
" Persons employed ... ..	
" Coal-cutting machines ... ..	
Ireland, Summary of Mineral output ... ..	
(See also under each County.)	
" Lead smelters ... ..	
Irish Coal-fields, Counties ... ..	
" Fatal accidents ... ..	
" Output of Mineral ... ..	
" Persons employed ... ..	5
Iron Bonus Commission, Queensland ... ..	
Iron or Iron ore, Output of :	
United Kingdom ... ..	10, 41, 139, 226, 301,
Alabama ... ..	
Algeria ... ..	
Australia ... ..	
Austria ... ..	
Bavaria ... ..	
Belgium ... ..	
Bosnia and Herzegovina ... ..	
Canada ... ..	
Chili ... ..	
Cuba ... ..	
France ... ..	
German Empire ... ..	301,
Greece ... ..	
Hungary ... ..	
India ... ..	
Italy ... ..	
Japan ... ..	
Luxemburg ... ..	
Mexico ... ..	
Michigan ... ..	
Minnesota ... ..	
Newfoundland ... ..	
New South Wales ... ..	
New Zealand ... ..	
Norway ... ..	
Nova Scotia ... ..	
Ontario ... ..	
Portugal ... ..	
Prussia ... ..	

	Page.
Kincardine, Gravel and sand ... ..	160, 212
" Igneous rocks ... ..	160, 215
" Sandstone ... ..	161, 268
" Persons employed ... ..	66, 161
King's County, Bog ore ... ..	163
" Gravel and sand ... ..	162, 213
" Limestone ... ..	163, 253
" Sandstone ... ..	163, 268
" Persons employed ... ..	67, 163
Kinross, Clay ... ..	160, 176
" Coal... ..	160, 181, 184
" Igneous rocks ... ..	160, 215
" Persons employed ... ..	57, 66, 161
Kirkcudbright, Igneous rocks ... ..	160, 215
" Persons employed ... ..	66, 161

## L.

LABUAN, Output of coal ... ..	322
Lanarkshire, Clay ... ..	160, 176
" Coal .. ..	160, 181, 184
" Gravel and sand ... ..	160, 212
" Igneous rocks ... ..	160, 215
" Iron ore ... ..	160, 218, 219
" Lead ore ... ..	161, 241, 244
" Limestone ... ..	161, 253
" Oil shale ... ..	161, 258
" Sandstone ... ..	161, 268
" Silver ... ..	241, 244
" Blast furnaces ... ..	227, 234
" Coal traffic ... ..	190, 192
" Death-rate from accidents... ..	96
" Persons employed ... ..	57, 63, 66, 96, 161
" Zinc smelters ... ..	289
Lancashire, Clay ... ..	158, 176
" Coal ... ..	158, 180, 184
" Gravel and sand ... ..	158, 212
" Igneous rocks ... ..	158, 214
" Iron ore ... ..	158, 218, 220, 222
" Iron pyrites ... ..	158, 237
" Limestone ... ..	159, 252
" Salt ... ..	159, 264
" Sandstone ... ..	159, 267
" Slate ... ..	159, 271, 272
" Blast furnaces ... ..	227, 230
" Coal traffic ... ..	188, 189, 191
" Copper smelters ... ..	208
" Death-rate from accidents ... ..	95
" Lead smelters ... ..	250
" Persons employed ... ..	57, 59, 62, 65, 95, 159
" Zinc smelters ... ..	289
Lancashire and Cheshire Coal-fields, Counties ... ..	51
" " " Fatal Accidents ... ..	91-94
" " " Output of Mineral ... ..	182, 183
" " " Persons employed ... ..	55, 56
Lancashire and Yorkshire Railway, Coal and Coke carried ... ..	188
Lead obtainable from British ores ... ..	139, 241-244
" " imported foreign ores ... ..	249
" Prices of, in the London market ... ..	245, 246
" Quantity available for home consumption ... ..	249
" Smelters in United Kingdom ... ..	250, 251
" and lead ore, Exported ... ..	246-249
" " Imported ... ..	248, 249
Lead and lead ore, Output of :	
United Kingdom ... ..	10, 41, 139, 241-245, 301, 306, 307
Algeria ... ..	301, 363
Australia ... ..	301, 309

	Page.
Lead and lead ore, Output of—cont.	
Austria ... ..	301, 369
Belgium ... ..	301, 381
Bolivia ... ..	301, 363
British Columbia ... ..	329
Canada ... ..	301, 328
Chili ... ..	301, 388
China ... ..	301, 389
France ... ..	301, 400
German Empire ... ..	301, 406
Greece ... ..	301, 421
Hungary ... ..	301, 375
Italy ... ..	301, 428
Japan ... ..	301, 431
Mexico ... ..	301, 434
New South Wales ... ..	311
Ontario ... ..	332
Peru ... ..	301, 439
Portugal ... ..	301, 442
Prussia ... ..	414
Quebec ... ..	333
Queensland ... ..	314
Rhodesia ... ..	301, 356
Russia ... ..	301, 448
Servia ... ..	301, 451
South Australia ... ..	316
Spain ... ..	301, 455
Sweden ... ..	301, 458
Tasmania ... ..	301, 317
Tunis ... ..	301, 462
Turkey ... ..	301, 464
United States ... ..	301, 470
Western Australia ... ..	301, 320
Lead poisoning cases at Broken Hill Mines (New South Wales) ... ..	313
Leeds and Liverpool Canal Co. Coal traffic ... ..	191
Leeward Islands ( <i>see</i> Redonda).	
Legislation relating to Mines in :	
United Kingdom ... ..	117, 118
Canada ... ..	330
India ... ..	349
Nova Scotia ... ..	331
Transvaal ... ..	359
Western Australia ... ..	321
Leicestershire, Clay ... ..	158, 176
" Coal ... ..	158, 180, 184
" Gravel and sand ... ..	158, 212
" Igneous rocks ... ..	158, 214
" Iron ore ... ..	158, 218, 223
" Limestone ... ..	159, 252
" Slate ... ..	159, 271
" Blast furnaces ... ..	227, 230
" Coal traffic ... ..	189
" Death-rate from Accidents ... ..	95
" Persons employed ... ..	57, 62, 65, 95, 159
Leitrim Co., Coal ... ..	162, 181, 184
" Sandstone ... ..	163, 268
" Coal traffic ... ..	190
" Persons employed ... ..	58, 67, 163
Liberia, Mineral wealth ... ..	432
Lignite ( <i>see</i> Brown coal).	
Limerick Co., Gravel and sand ... ..	162, 213
" Igneous rocks ... ..	162, 215
" Limestone ... ..	163, 253
" Sandstone ... ..	163, 268
" Persons employed ... ..	67, 163
Lime or limestone :	
Output of United Kingdom ... ..	10, 41, 139, 252, 253, 306
Algeria ... ..	363
Australia... ..	309
Bavaria ... ..	413
Belgium ... ..	381
Canada ... ..	328
Cuba ... ..	391
France ... ..	400, 401



	Page.		
Mechanical Coal-cutters, number in use in United Kingdom, and coal got by ...	111, 112	Miscellaneous fatal accidents at Mines ...	22-25, 35
" " " United States	465, 466	" " Quarries	26, 27, 100,
Melaphyre, Output of Bavaria ...	413	" non-fatal accidents at Mines	...
Mercury ( <i>see</i> Quicksilver).		" " Quarries	...
Merionethshire, Clay...	160, 176	Missouri, Accidents at Coal Mines	...
" Gold ...	161, 210	" Persons employed	...
" Igneous rocks ...	160, 214	" Coal-cutting machines	...
" Limestone ...	161, 252	Molybdenite, Output of Australia	...
" Manganese ore ...	161, 254	" " New South Wales	...
" Sandstone ...	161, 267	" " Norway	...
" Slate ...	161, 271, 273	" " Ontario	...
" Death-rate from accidents	96	" " Queensland	...
" Persons employed	63, 66, 96, 161	Monaghan Co., Limestone	...
Mexico, Accidents	302, 434	" Persons employed	...
" Mineral output	301, 434	Monasite, Output of:	
" Persons employed	300, 433	Brazil	...
Mica, Output of:		United States	...
United Kingdom	10, 139, 255, 306	Monkland Canal, Coal and Coke traffic	...
Canada	328	Monmouthshire, Clay	...
Ceylon	338	" Coal	158,
India	346	" Gravel and sand	...
Natal	350	" Iron ore	158,
Ontario	332	" Limestone...	...
Quebec	333	" Sandstone...	...
Saxony	419	" Blast furnaces	...
United States	469	" Coal traffic	...
Mucaceous Iron	257	" Death-rate from accidents	...
Michigan, Accidents at Coal Mines	471	" Persons employed	57, 61
" " " Ore	472	Montana, Accidents at Coal Mines	...
" Output of Iron Ore	471	" Persons employed	...
" Persons employed	468	" Coal-cutting machines	...
" Coal-cutting machines	466	Montgomeryshire, Barytes	160,
Middlesex, Chalk	158, 174	" Clay	...
" Chert and flint	158, 175	" Igneous rocks	...
" Clay	158, 176	" Lead ore...	161,
" Gravel and sand	158, 212	" Limestone	...
" Lead smelters	250	" Sandstone	...
" Persons employed	65, 159	" Silver	...
Midland coal-fields, Counties	54	" Slate	161,
" " Fatal accidents	91-94	" Zinc ore...	161,
" " Output of Minerals	182, 183	" Persons employed	61
" " Persons employed	55, 56, 183	Morocco, Mineral workings of	...
Midland Railway Coal and Coke traffic	189	Moss Hall Colliery	...
Millstones, Output of:		Mysore Gold Mines, Accidents	...
France	401	" " " Persons employed	...
Greece	421		
Servia	451		
United States	469		
Mine, Definition of	5		
Mineral oil ( <i>see</i> Petroleum).			
Mineral output of the several Coal-fields...	182, 183		
" " per person employed	183		
Mineral output of:			
United Kingdom, summary	10, 139-141		
British Empire, summary	301		
Foreign Countries, summary	301		
Mines in each county	142-149		
Quarries in each county	150-155		
Shallow workings, &c., in each county	156, 157		
Mineral output, County summary, all Mines, Quarries, &c.	158-163		
Mineral paints, Output of United States	469		
Mineral waters, Output of:			
Canada	328		
Italy	428		
Spain	455		
United States	469		
Miners' Phthisis in Cornwall, Report of Dr. Haldane and J. S. Martin	116		
Minnesota, Output of Iron Ore	471		
Mines and Quarries, Inspection districts	46, 47		

## N.

NAIRN, Igneous rocks	...
" Sandstone	...
" Persons employed	...
Naked lights, Explosions of fire-damp caused by Naphtha ( <i>see</i> Petroleum).	...
Natal, Accidents	...
" Mineral output	...
" Persons employed	...
Natural gas, Output of:	
United Kingdom	10, 136
Canada	...
Ontario	...
United States	...
Nagri Sembilan, Mineral Output	...
Negro Powder, Accidents with	...
New Caledonia, Mineral output	...
" Persons employed	...
Newfoundland, Accidents	...
" Mineral output of	...
" Persons employed	...

	Page.
Guinea ( <i>see</i> British New Guinea).	
Mexico, Accidents at Coal Mines ... ..	472
" Persons employed ... ..	468
" Coal-cutting machines ... ..	466
South Wales, Accidents ... ..	302, 303, 312
" Mineral output ... ..	311, 312
" Persons employed ... ..	311
Zealand, Accidents ... ..	302, 353
" Mineral output ... ..	301, 353
" Persons employed ... ..	300, 352
Paraguay, Output of Gold ... ..	301, 436
Nickel or nickel ore, Output of :	
United Kingdom ... ..	41, 199, 256
Canada ... ..	328
German Empire... ..	406
New Caledonia ... ..	436
Norway ... ..	437
Ontario ... ..	332
Prussia ... ..	414
Saxony ... ..	419
United States ... ..	470
Peru, Mineral wealth ... ..	354
Rate of soda, Output of Chili ... ..	388
Trinitro-glycerine explosives, Precautions as to use at	
Quarries ... ..	104
Non-fatal accidents at Mines in United Kingdom	28-31
" " Quarries " "	32, 33
Devon, Chalk ... ..	158, 174
" Chert and flint ... ..	158, 175
" Clay ... ..	158, 176
" Gravel and sand .. ..	158, 212
" Sandstone ... ..	159, 267
" Persons employed ... ..	65, 159
Dorset, Clay ... ..	158, 176
" Gravel and sand ... ..	158, 212
" Iron ore ... ..	158, 218, 220, 223
" Limestone ... ..	159, 252
" Sandstone ... ..	159, 267
" Blast furnaces ... ..	227, 230
" Persons employed ... ..	59, 62, 65, 159
North Borneo, Mineral deposits ... ..	322
North British Railway, Coal and Coke traffic ... ..	190
North Eastern Railway, Coal and Coke traffic ... ..	189
North Coal-field, Counties ... ..	54
" Fatal accidents ... ..	91-94
" Output of Mineral ... ..	182, 183
" Persons employed ... ..	55, 56, 183
North Staffordshire Railway, Coal and Coke traffic ... ..	189
" " " Salt conveyed ... ..	265, 266
Northumberland, Barytes ... ..	158, 169, 170
" Clay ... ..	158, 176
" Coal ... ..	158, 180, 184
" Gravel and sand ... ..	158, 212
" Igneous rocks ... ..	158, 214
" Lead ore ... ..	159, 241, 242
" Limestone ... ..	159, 252
" Sandstone ... ..	159, 267
" Silver ... ..	241, 242
" Zinc ore ... ..	159, 284, 285
" Coal traffic ... ..	189
" Copper smelters ... ..	208
" Death-rate from accidents ... ..	95
" Lead smelters ... ..	260
" Persons employed ... ..	57, 62, 65, 95, 159
North Wales Coal-field, Counties ... ..	54
" Fatal accidents ... ..	91-94
" Output of Mineral ... ..	182, 183
" Persons employed ... ..	55, 56, 183
Norway, Mineral output ... ..	301, 437
" Persons employed ... ..	300, 437
Nottinghamshire, Clay ... ..	158, 176
" Coal ... ..	158, 180, 184
" Gravel and sand ... ..	158, 212
" Gypsum ... ..	158, 213
" Iron ore ... ..	158, 218, 223
" Iron pyrites ... ..	158, 237

	Page.
Nottinghamshire— <i>cont.</i>	
" Limestone ... ..	159, 252
" Sandstone ... ..	159, 267
" Blast furnaces ... ..	227, 231
" Coal traffic ... ..	188, 189
" Copper smelters ... ..	208
" Death-rate from accidents ... ..	95
" Persons employed ... ..	57, 62, 65, 95, 159
Nova Scotia, Accidents ... ..	302, 331
" Mineral output ... ..	331
" Persons employed ... ..	330
" Legislation ... ..	331

## O.

## OCHRE AND UMBER, Output of :

United Kingdom ... ..	10, 41, 139, 256-258, 306
Bavaria ... ..	413
Belgium ... ..	381
Canada ... ..	328
Cyprus ... ..	340
France ... ..	401
Japan ... ..	431
Quebec ... ..	333
Saxony ... ..	419
Ohio, Accidents at Coal Mines ... ..	472
" Persons employed ... ..	468
" Coal-cutting machines ... ..	466
" Output of Coal ... ..	470
Oil shale, Output of :	
United Kingdom ... ..	10, 41, 139, 258, 259, 306
Australia ... ..	309
New South Wales ... ..	312
New Zealand ... ..	353
Oil stones, Output of United States ... ..	489
Old Roundwood Colliery Accident ... ..	76, 77
Onyx, Output of :	
Algeria ... ..	363
France ... ..	401
Ontario, Accidents ... ..	302, 332
" Mineral output ... ..	332
" Persons employed ... ..	331
Opal, Output of :	
Australia ... ..	309
New South Wales ... ..	312
Queensland ... ..	314
Orange River Colony, Diamonds ... ..	353
Orkney, Sandstone ... ..	161, 268
" Persons employed ... ..	66, 161
Output of Minerals from Mines in each inspection	
district under the Coal Mines Act ... ..	14, 15
Do. do. per Person employed	14, 15
Output of Minerals from Mines in each inspection	
district under the Metalliferous Mines Act ... ..	16, 17
Output of Minerals from Quarries in each inspection	
district under the Quarries Act ... ..	18, 19
Output of Minerals from certain shallow workings	20, 21
Output of Minerals from each county under the Coal	
Mines Act... ..	142-145
Output of Minerals from each county under the Metal-	
liferous Mines Act ... ..	146-149
Output of Minerals from each county under the	
Quarries Act ... ..	150-155
Output of Minerals from shallow workings, brine	
wells, &c. ... ..	156, 157
Output of Minerals from the several Coal-fields	182, 183
" " from Mines, 1873 to 1903 ... ..	39
" " from Mines and Quarries, 1873 to	
1903... ..	40, 41
" " in United Kingdom, General	
Summary ... ..	10, 139

	Page
Output of Minerals in British Colonies ...	301
" " in Foreign Countries ...	301
" " (see also under each Colony and Country, and under each Mineral).	
Overwinding, Accidents from ...	28, 29, 80, 81
Oxfordshire, Chalk ...	158, 174
" Chert and flint ...	158, 175
" Clay ...	158, 176
" Gravel and sand ...	158, 212
" Iron ore ...	158, 218, 223
" Limestone ...	159, 252
" Sandstone ...	159, 267
" Persons employed ...	62, 65, 159
Ozokerite, Output of Austria ...	370

## P.

PAHANG, Mineral output ...	341
Panama, Mineral Output ...	301, 438
Paraguay, Mineral deposits of ...	438
Patent fuel, Exported ...	185, 197-199
" Shipped coastwise ...	193-195, 199
Paving stone, Output of :	
Bavaria ...	413
Belgium ...	381
France ...	401
Newfoundland ...	351
Tunis ...	462
Peat, Output of :	
Canada ...	328
France ...	400
Holland ...	422
Italy ...	428
Japan ...	431
Ontario ...	332
Pebbles, Coal ...	160, 181, 184
" Igneous rocks ...	160, 215
" Limestone ...	161, 253
" Sandstone ...	161, 268
" Persons employed ...	57, 66, 161
Pembroke, Coal ...	160, 181, 182, 184
" Igneous rocks ...	160, 214
" Limestone ...	161, 252
" Sandstone ...	161, 267
" Slate ...	161, 271
" Persons employed ...	57, 66, 161
Pennsylvania, Accidents ...	472
" Output of Coal ...	467, 470
" Persons employed ...	468
" Coal-cutting machines ...	466
Perak, Output of Tin ...	342
Persia, Minerals obtained in ...	438
Persons employed in inspection districts under the Coal Mines Act ...	11
Persons employed in inspection districts under the Metalliferous Mines Act ...	12
Persons employed in inspection districts under the Quarries Act ...	13
Persons employed in each county under the Coal Mines Act ...	143, 145
Persons employed in each county under the Metalliferous Mines Act ...	147, 149
Persons employed in each county under the Quarries Act ...	65-67, 151, 153, 155
Persons employed in the several Coal-fields ...	55, 56, 183
" at Coal Mines ...	54-58, 184
" " Iron Mines ...	54, 58-60
" " "other" Mines ...	54, 60-63
" " different kinds of Quarries ...	64
" " Mines, 1873 to 1903 ...	38

	Page
Persons employed at Mines and Quarries in United Kingdom, Summary ...	6, 9, 53, 163, 300, 305
" " Mines and Quarries in British Colonies, Summary of ...	300
" " Mines and Quarries in Foreign Countries, Summary of ...	300
Persons employed in Mining in :	
Algeria ...	300, 362
Australia ...	300, 308
Austria ...	300, 367, 368
Bahamas ...	300, 331
Banca ...	393
Bavaria ...	413
Belgium ...	300, 378, 379
Billiton ...	393
Bohemia ...	373
Bosnia and Herzegovina ...	300, 376
British Borneo ...	300, 322
British Columbia ...	329
British Guiana ...	300, 324
British New Guinea ...	325
Bulgaria ...	300, 365
Canada ...	300, 329-333
Cape Colony ...	300, 334
Ceylon ...	300, 338
Chili ...	300, 387
Corea ...	300, 391
Dutch East Indies ...	300, 393, 395
Federated Malay States ...	300, 340, 341
France ...	300, 399
German Empire ...	300, 405, 406
Gold Coast ...	300, 343
Greece ...	300, 420
Greenland ...	300, 392
Holland ...	300, 422, 423
Hungary ...	300, 374
India ...	300, 345
Indo-China ...	300, 424
Italy ...	300, 426, 427
Japan ...	300, 430
Kimberley ...	334, 335
Luxemburg ...	300, 405
Madagascar ...	300, 432
Mexico ...	300, 433
Natal ...	300, 349
New Caledonia ...	300, 435
Newfoundland ...	300, 350
New South Wales ...	311
New Zealand ...	300, 352
Norway ...	300, 437
Nova Scotia ...	330
Ontario ...	331
Orange River Colony ...	300, 354
Peru ...	300, 438
Portugal ...	300, 441
Prussia ...	413
Quebec ...	331
Queensland ...	314
Redonda ...	300, 355
Rhodesia ...	300, 356
Russia ...	300, 447
Saxony ...	418
Servia ...	300, 450
Siam ...	300, 452
Singkep ...	395
South Australia ...	315
Spain ...	300, 453, 454
Sumatra ...	395
Sweden ...	300, 457
Switzerland ...	300, 459, 460
Tasmania ...	317
Transvaal ...	300, 357
United States ...	300, 468
Victoria ...	318
Western Australia ...	322



	Page.		Page.
alt, Exported ... ..	266	Saxony, Accidents ... ..	419
" Conveyed by railway, canal, &c. ... ..	265, 266	" Mineral output ... ..	418, 419
" Rock and white, Output of :		" Persons employed ... ..	418
United Kingdom ... ..	10, 41, 139, 264, 301, 306	Scotch Coal-fields, Counties ... ..	54
Abyssinia ... ..	301, 362	" " Fatal Accidents ... ..	91-94
Aden ... ..	301, 308	" " Output of minerals ... ..	182, 183
Algeria ... ..	301, 363	" " Persons employed ... ..	55, 56, 183
Argentine Republic ... ..	301, 364	Scotland, Summary of Mineral output ... ..	141
Australia ... ..	301, 309	" Copper smelters ... ..	208
Austria ... ..	301, 369	" Explosions from naked lights ... ..	77
Bahamas ... ..	301, 321	" Lead smelters ... ..	251
Bavaria ... ..	413	" Railway and canal traffic of Coal and coke ... ..	190, 192
Bonaire and St. Martin ... ..	396	Selangor, Output of Tin ... ..	342
Bosnia and Herzegovina ... ..	301, 377	Selkirk, Igneous rocks ... ..	160, 215
Brasil ... ..	301, 381	" Persons employed ... ..	66, 161
Canada ... ..	301, 328	Senegal, Gold exported ... ..	301, 450
Cape Colony ... ..	301, 334	Servia, Accidents ... ..	302, 451
Ceylon ... ..	301, 338	" Mineral output ... ..	301, 451
Chili ... ..	301, 388	" Persons employed ... ..	300, 450
China ... ..	301, 389	Shaft Accidents ... ..	22-25, 28-31, 35, 73, 80-83
Cochin China ... ..	424	Shafts, Disused, danger of ... ..	88
Curaçao ... ..	396	Shale (see Oil shale).	
Cyprus ... ..	301, 340	Shelton Colliery Accident ... ..	88
Dutch West Indies ... ..	301, 396	Sherwood Colliery Accident ... ..	87
Formosa ... ..	301, 397	Shetland, Limestone... ..	161, 253
France ... ..	301, 400	" Sandstone ... ..	161, 268
German Empire ... ..	301, 406-408	" Persons employed ... ..	66, 161
Greece ... ..	301, 421	Shipments of China clay, and stone ... ..	177
Honduras ... ..	301, 424	" Coal, coke, &c. coastwise ... ..	193-195, 199
Hungary ... ..	301, 375	Shot-firing, Accidents caused by, in Mines ... ..	75-77
India ... ..	301, 346	" " Quarries ... ..	102, 103
Indo China ... ..	301, 424	Shropshire, Barytes ... ..	158, 169, 170
Italy ... ..	301, 428	" Clay ... ..	158, 176
Japan ... ..	301, 431	" Coal ... ..	158, 180, 184
Mexico ... ..	301, 434	" Gravel and sand ... ..	158, 212
Ontario ... ..	332	" Igneous rocks ... ..	158, 214
Persia ... ..	301, 438	" Iron ore... ..	158, 218, 219
Peru ... ..	301, 439	" Iron pyrites ... ..	158, 237
Prussia ... ..	414, 415	" Lead ore ... ..	159, 241, 242
Roumania ... ..	301, 444	" Limestone ... ..	159, 252
Russia ... ..	301, 448	" Sandstone ... ..	159, 267
South Australia ... ..	316	" Zinc ore... ..	159, 284, 285
Spain ... ..	455	" Blast furnaces ... ..	227, 231
Switzerland ... ..	301, 461	" Coal traffic ... ..	188, 189, 191
Transvaal ... ..	301, 358	" Death-rate from accidents ... ..	95
Tunis ... ..	301, 462	" Persons employed ... ..	57, 59, 62, 65, 95, 159
Turkey ... ..	301, 464	Shropshire Union Canal, Coal and Coke traffic ... ..	191
Turks and Caicos Islands ... ..	301, 360	Siam, Mineral output ... ..	301, 452
United States ... ..	301, 469	" Persons employed ... ..	300, 452
Venezuela ... ..	301, 474	Silicon iron ... ..	228
Western Australia ... ..	320	Silver bullion and specie, Imported and exported, Value of ... ..	269
Petre, Output of India ... ..	346	" extractors and refiners (see Copper and Lead smelters) ... ..	207, 208, 250, 251
d and gravel, Output of :		" extracted from imported Pyrites ... ..	239, 269
United Kingdom ... ..	10, 40, 139, 212, 213	" obtainable from British Lead ore ... ..	241-244
Algeria ... ..	363	" Prices of standard, in London market ... ..	270
Bavaria ... ..	413	" ore, Imported ... ..	269
Belgium ... ..	381	Silver or silver ore, Output of :	
Canada ... ..	328	United Kingdom ... ..	10, 139, 268, 269, 301, 306, 307
France ... ..	401	Abyssinia ... ..	301
Nova Scotia ... ..	331	Algeria ... ..	301
Tunis ... ..	462	Argentine Republic ... ..	301
United States ... ..	469	Australia ... ..	301, 309
estone, Output of :		Austria ... ..	301, 369
United Kingdom ... ..	10, 41, 139, 267, 268, 306	Bolivia ... ..	301, 383
Australia ... ..	309	British Columbia ... ..	329
Bavaria ... ..	413	Canada ... ..	301, 328
Queensland ... ..	314	Chili ... ..	301, 388
estone Quarries, Accidents ... ..	98, 99	Colombia ... ..	301, 390
" " Persons employed ... ..	64	Dutch East Indies ... ..	301, 395
Swich Islands, Mineral Deposits ... ..	449	Ecuador ... ..	301, 396
itation of Mines, Suggested regulations ... ..	116, 117	France ... ..	301
Swak, Mineral output ... ..	323		
tonite, Accidents with ... ..	84		

## Q.

	Page.
QUARRIES, Death-rate from accidents ...	8, 34, 97, 98
" Fatal accidents ...	7, 9, 26, 27, 96-106
(See also under Accidents.)	
" Fatal accidents at different kinds of ...	98, 99
" Non-fatal accidents ...	32, 33
" Prosecutions of Owners and Workmen ...	109, 110
" Suggestions for preventing accidents ...	102, 104, 105
" Remarks on laxity of owners regarding observance of regulations ...	110
" Number at work ...	13, 65-67
" Mineral output, summary of ...	10
" " " in each county ...	150-155
" " " " inspection district ...	18, 19
" Persons employed, summary of ...	6, 9, 64
" " " in each county ...	65-67, 151, 153, 155
" " " in each inspection district ...	13
" " " at different kinds of ...	64
Quarries, Output of :	
Algeria ...	363
Belgium ...	381
France ...	401
Italy ...	428
Russia ...	448
Sweden ...	458
Switzerland ...	460, 461
Quartz, Output of :	
Belgium ...	381
Saxony ...	419
United States ...	469
Quartzite (see Sandstone) ...	267, 268
Quebec, Accidents ...	302, 333
" Mineral output ...	333
" Persons employed ...	333
Queen's County, Coal ...	162, 181, 182, 184
" Gravel and sand ...	162, 213
" Igneous rocks ...	162, 215
" Limestone ...	163, 253
" Coal traffic ...	190
" Persons employed ...	58, 67, 163
Queensland, Accidents ...	302, 303, 315
" Mineral output ...	314
" Persons employed ...	314
Quicksilver, United Kingdom ...	262
" Exported ...	263
" Imported ...	262
Quicksilver ore, Output of :	
Algeria ...	363
Australia ...	309
Austria ...	369
Italy ...	428
Japan ...	431
New South Wales ...	312
Russia ...	448
Spain ...	455
United States ...	470

## R.

RADNORSHIRE, Igneous rocks ...	160, 214
" Limestone ...	161, 252
" Sandstone ...	161, 267
" Persons employed ...	63, 66, 161

## Page.

Railway traffic of Coal and Coke ...	182-190
Railways, Sidings, and Tramways, Accidents on, at Mines ...	22-25, 28-31, 89-91
Railways, Sidings, and Tramways, Accidents on, at Quarries ...	26, 27, 32, 33, 100, 104-106
Redonda, Output of Phosphate of alumina ...	355
" Persons employed ...	300, 355
Red oxide of iron, Output of Gloucestershire and Somerset ...	257
Refiners, Antimony ...	165
" Arsenic ...	168
Regulus, Exported ...	206
" Imported ...	206, 207
Renfrewshire, Barytes ...	160, 169, 171
" Clay ...	160, 176
" Coal ...	160, 181, 184
" Gravel and sand ...	160, 212
" Igneous rocks ...	160, 215
" Iron ore ...	160, 218, 219
" Limestone ...	161, 253
" Sandstone ...	161, 268
" Coal traffic ...	190
" Persons employed ...	57, 60, 63, 66, 161
Rhodesia, Fatal Accidents ...	302, 344
" Mineral output ...	301, 344
" Persons employed ...	300, 344
Roburite, Accidents with ...	84
Rock drills, suggested regulations ...	116
Rock salt, Carted inland ...	265
" Conveyed by railways, &c. ...	265
" Exported ...	266
" Output of United Kingdom ...	10, 264
Ronaldson, J. M., Remarks on the want of discipline among miners ...	77
Roofing slates, Exported ...	274, 276
Ropes or chains breaking, Accidents from ...	22, 28, 32, 82, 83
Rosecommon Co., Coal ...	162, 181, 184
" Sandstone ...	163, 268
" Coal traffic ...	190
" Persons employed ...	58, 67, 163
Rosehall, No. 5 Pit Accident ...	8
Ross and Cromarty, Igneous rocks ...	160, 215
" Sandstone ...	161, 261
" Persons employed ...	66, 161
Roumania, Mineral output ...	301, 441
Roxburgh, Clay ...	160, 171
" Igneous rocks ...	160, 215
" Limestone ...	161, 253
" Sandstone ...	161, 268
" Persons employed ...	66, 161
Russia, Accidents ...	302, 441
" Mineral output ...	301, 447, 441
" Persons employed ...	300, 441
Rutile (see Titanium).	
Rutland, Iron ore ...	158, 218, 221
" Limestone ...	159, 221
" Sandstone ...	159, 221
" Persons employed ...	65, 151

## S.

SABA, Sulphur deposits ...	396
Sacriston Colliery Accident ...	86
Safety lamps, Accidents caused by ...	74
St. Lucia, Sulphur Mine ...	356
St. Martin, Salt workings ...	396
Sahara, Salt deposits ...	449

	Page.		Page.
Silver or silver ore, Output of— <i>cont.</i>		Soda ( <i>see</i> Nitrate of soda).	
German Empire ... ..	301, 407, 409	Sodium, Production in United Kingdom...	139, 275
Honduras ... ..	301, 424	Sodium sulphate, Output of :	
Hungary ... ..	301, 375	German Empire ... ..	407
Italy ... ..	301, 428	Italy ... ..	428
Japan ... ..	301, 431	Prussia ... ..	415
Mexico ... ..	301, 434	Russia ... ..	448
New South Wales ... ..	312	Spain ... ..	455
New Zealand ... ..	301, 353	Somali Coast Protectorate, Mineral deposits	356
Norway ... ..	301, 487	Somersetshire, Chalk ... ..	158, 174
Ontario ... ..	332	Chert and flint ... ..	158, 175
Peru ... ..	301, 439	Clay ... ..	158, 176
Prussia ... ..	414	Coal ... ..	158, 180, 184
Queensland ... ..	314	Fuller's earth ... ..	176
Rhodesia ... ..	301, 356	Gravel and sand ... ..	158, 212
Russia ... ..	301, 448	Gypsum ... ..	158, 213
Saxony ... ..	419	Lead ore ... ..	159, 241, 244
Servia ... ..	301, 451	Limestone ... ..	159, 252
South Australia... ..	316	Ochre ... ..	159, 256, 257
Spain ... ..	301, 455	Sandstone ... ..	159, 267
Sweden ... ..	301, 458	Slate ... ..	159, 271
Tasmania ... ..	317	Strontium sulphate ... ..	275
Transvaal ... ..	301, 358	Coal traffic ... ..	185
United States ... ..	301, 470	Copper smelters ... ..	208
Uruguay ... ..	301, 473	Death-rate from accidents ... ..	95
Venezuela ... ..	301, 474	Lead smelters ... ..	250
Victoria ... ..	318	Tin smelters ... ..	282
Western Australia ... ..	320	Persons employed ... ..	57, 62, 65, 95, 159
Silver lead ore, Output of :		Soudan, Mineral wealth ... ..	397
United Kingdom ... ..	241-244	South Australia, Mineral output ... ..	316
Algeria ... ..	363	Persons employed ... ..	315
Australia... ..	309	South Wales Coalfield, Counties ... ..	54
Bolivia ... ..	383	Fatal accidents ... ..	91-94
Chili ... ..	388	Mineral output ... ..	182, 183
France ... ..	400	Persons employed ... ..	55, 56, 183
Greece ... ..	421	Spain, Accidents ... ..	302, 456
Hungary ... ..	374	Mineral output ... ..	301, 454, 455
New South Wales ... ..	312	Persons employed ... ..	300, 453, 454
South Australia... ..	316	Special Bulldog powder, Accidents with...	84
Spain ... ..	455	Spelter ( <i>see</i> Zinc) ... ..	284-289
Sweden ... ..	458	Spiegeleisen ( <i>see</i> Iron) ... ..	228
Tasmania ... ..	317	Spitzbergen coal deposits ... ..	456
Turkey ... ..	464	Staffordshire, Clay ... ..	158, 176
Western Australia ... ..	320	Coal ... ..	158, 180, 184
Singkep, Output of Tin ... ..	395	Gravel and sand ... ..	158, 212
Persons employed... ..	395	Gypsum ... ..	158, 213
Slate, Output of :		Igneous rocks ... ..	158, 214
United Kingdom ... ..	10, 41, 139, 270-274, 306	Iron ore ... ..	158, 218, 219, 225
Bavaria ... ..	413	Iron pyrites ... ..	158, 23
Belgium ... ..	381	Limestone ... ..	159, 25
Canada ... ..	328	Oil shale ... ..	159, 25
France ... ..	401	Salt ... ..	159, 26
Newfoundland ... ..	351	Sandstone ... ..	159, 26
Quebec ... ..	333	Blast furnaces ... ..	227, 228
Slate Quarries, Accidents ... ..	98, 99	Coal traffic ... ..	188, 189, 191, 19
Persons employed ... ..	64	Death-rate from accidents... ..	
Slates, roofing, Exported ... ..	274, 275	Persons employed ... ..	57, 59, 62, 65, 96, 1
Sligo Co., Barytes ... ..	162, 170, 171	Staffordshire and Worcestershire Canal, Coal and Coke	
Coal ... ..	162, 181, 184	traffic ... ..	1
Limestone... ..	163, 253	Salt conveyed ... ..	2
Persons employed ... ..	58, 63, 67, 163	Standard silver, Prices in the London market ... ..	2
Small detached coalfields, Counties		Steatite ( <i>see</i> Soapstone).	
Fatal accidents ... ..	91-94	Stirlingshire, Clay ... ..	160,
Output of minerals ... ..	182, 183	Coal ... ..	160, 181,
Persons employed ... ..	55, 56, 183	Gravel and sand ... ..	160,
Smelters, Antimony ... ..		Igneous rocks ... ..	160,
Copper ... ..	207, 208	Iron ore ... ..	160, 218,
Lead ... ..	250, 251	Limestone ... ..	161,
Tin ... ..	282	Sandstone ... ..	161,
Zinc... ..	389	Blast furnaces ... ..	227,
Soapstone, Output of		Coal traffic ... ..	190,
United Kingdom ... ..	275	Death-rate from accidents ... ..	95
Bavaria ... ..	413	Persons employed ... ..	57, 63, 66, 95,
France ... ..	401	Stokes, A. H., Remarks on scientific education of miners	117, 1
Spain ... ..	455		
United States ... ..	469		





	Page.
Westfalite, accidents with ...	84
Westmeath Co., Limestone ...	163, 253
Persons employed...	67, 163
Westmorland, Barytes ...	158, 169, 170
Coal ...	158, 180, 184
Gypsum ...	158, 213
Igneous rocks ...	158, 214
Lead ore ...	159, 241, 243
Limestone ...	159, 252
Sandstone ...	159, 267
Silver ...	241, 243
Slate ...	159, 271, 272
Lead smelters ...	251
Persons employed ...	57, 62, 65, 159
West Virginia, Accidents at Coal Mines ...	472
Output of coal ...	470
Persons employed ...	468
Coal-cutting machines ...	466
Wexford Co., Igneous rocks ...	162, 215
Limestone ...	163, 253
Sandstone ...	163, 268
Slate ...	163, 271
Persons employed ...	67, 163
Whetstones, Production of :	
Bavaria ...	413
France ...	402
White salt, Conveyed by railway, canal, &c. ...	265, 266
Exported ...	266
Produced in United Kingdom ...	264
Wicklow Co., Copper ore ...	162, 200, 201
Gravel and sand ...	162, 213
Igneous rocks ...	162, 215
Iron pyrites ...	162, 237
Limestone ...	163, 253
Persons employed ...	63, 67, 163
Wigtown, Clay ...	160, 176
Igneous rocks ...	160, 215
Persons employed ...	66, 161
Wiltshire, Chalk ...	158, 174
Clay ...	158, 176
Gravel and sand ...	158, 212
Iron ore ...	158, 218, 223
Limestone ...	159, 252
Sandstone ...	159, 267
Blast furnaces ...	227, 232
Persons employed ...	62, 65, 159
Wingate Grange Colliery Accident ...	81
Wolfram, Output of :	
United Kingdom ...	10, 41, 139, 283, 306
Australia... ...	309
Austria ...	369
Bolivia ...	383
German Empire... ...	407
Portugal ...	442
Queensland ...	314
Saxony ...	419
Spain ...	455
Worcester Canal, Coal traffic ...	191
Worcestershire, Clay ...	158, 176
Coal... ...	158, 180, 184
Gravel and sand ...	158, 212
Igneous rocks ...	158, 214
Iron ore ...	158, 218, 219, 223
Iron pyrites ...	237
Limestone ...	159, 252
Salt ...	159, 264
Sandstone ...	159, 267
Blast furnaces ...	227, 232
Coal traffic... ...	191
Copper smelters ...	208
Death-rate from accidents ...	96
Persons employed ...	57, 62, 65, 96, 159
Wyoming, Accidents at Coal Mines ...	472
Persons employed at Coal Mines ...	468
Coal-cutting machines ...	466

## Y.

	Page.
YORKSHIRE, Alum shale ...	159, 164
Barytes ...	158, 169, 171
Chalk ...	158, 174
Chert and flint ...	158, 175
Clay ...	158, 176
Coal ...	158, 180, 184
Gravel and sand ...	158, 212
Gypsum ...	158, 213
Igneous rocks ...	158, 214
Iron ore ...	158, 218, 219, 223
Iron pyrites ...	158, 237
Lead ore ...	159, 241, 243
Limestone ...	159, 252
Salt ...	159, 264
Sandstone ...	159, 267
Blast furnaces ...	227, 232
Coal traffic ...	188, 189, 191
Copper smelters... ...	208
Death-rate from accidents ...	95
Lead smelters ...	251
Persons employed ...	57, 59, 62, 65, 95, 159
Coalfield, Counties ...	54
Fatal accidents ...	91-94
Mineral output ...	182, 183
Persons employed ...	55, 56
Young persons, Fatal accidents to ...	35, 72, 73, 113
Legislation as to employment ...	118

## Z.

ZINC, Average price in the London market ...	288, 289
Diagram shewing fluctuations in price from 1873 to 1903 (Plate IV.) ...	290
Obtainable from British ores ...	139, 284-286
Smelters in United Kingdom ...	289
and zinc ore, Exported ...	287, 288
Imported ...	287
or zinc ore, Output of :	
United Kingdom ...	10, 41, 139, 284-286, 301, 306, 307
Algeria ...	301, 363
Australia ...	301, 309
Austria ...	301, 369
Belgium ...	301, 381
Bolivia ...	301, 383
Canada ...	301, 328
Chili... ...	301, 388
France ...	301, 400
German Empire ...	301, 407
Greece ...	301, 421
Italy ...	301, 428
Mexico ...	301, 434
New South Wales ...	312
Norway ...	301, 437
Ontario ...	332
Portugal ...	301, 442
Prussia ...	414
Russia ...	301, 448
Saxony ...	419
Servia ...	301, 451
Spain ...	301, 455
Sweden ...	301, 458
Tunis ...	301, 462
Turkey ...	301, 464
United States ...	301, 469, 470
Zircon, Output of :	
United States ...	469









HOME OFFICE.

**MINES AND QUARRIES:  
GENERAL REPORT AND STATISTICS  
For 1904.**

**PART IV.—COLONIAL AND FOREIGN STATISTICS.**

**STATISTICS RELATING TO PERSONS EMPLOYED, OUTPUT,  
AND ACCIDENTS AT MINES AND QUARRIES IN THE  
BRITISH COLONIES AND IN FOREIGN COUNTRIES.**

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Presented to both Houses of Parliament by Command of His Majesty.

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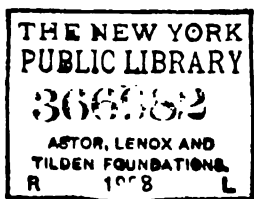


LONDON:  
PRINTED FOR HIS MAJESTY'S STATIONERY OFFICE,  
By DARLING & SON, LTD., 34-40, BACON STREET, E.

And to be purchased, either directly or through any Bookseller, from  
WYMAN AND SONS, LTD., FETTER LANE, E.C.,  
and 32, ABINGDON STREET, WESTMINSTER, S.W.;  
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or E. PONSONBY, 116, GRAFTON STREET, DUBLIN.

1906.

1911.] Price 1s. 9d.





## CONTENTS.

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	PAGE.
Introduction ... ..	305, 306
 British Empire and Foreign Countries :—	
Summary of Persons Employed at Mines and Quarries ... ..	308
Summary of Output of certain Minerals ... ..	309
Summary of Accidents and Death-rates per 1,000 Persons Employed at Mines and Quarries ... ..	310, 311
 Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings in the British Empire :—	
United Kingdom ... ..	313–315
 British Colonies and Dependencies :—	
Aden... ..	316
Australia ... ..	316–330
Bahamas ... ..	330
Barbados ... ..	330
Basutoland ... ..	331
Bechuanaland Protectorate... ..	331
British Borneo ... ..	331, 332
British Central Africa Protectorate ... ..	332
British East Africa Protectorate ... ..	332
British Guiana ... ..	333, 334
British New Guinea ... ..	334, 335
British Solomon Islands ... ..	335
Canada ... ..	335–343
Cape Colony ... ..	343–347
Ceylon ... ..	348, 349
Channel Islands ... ..	349
Christmas Island ... ..	349
Cyprus ... ..	350
Dominica ... ..	350
Federated Malay States ... ..	350–352
Gambia ... ..	352
Gold Coast ... ..	352, 353
India ... ..	353–359
Malta ... ..	359
Natal ... ..	359, 360
Newfoundland ... ..	360–362
New Zealand... ..	362–364
Nigeria ... ..	364
Orange River Colony ... ..	365, 366
Redonda .. ..	366
Rhodesia ... ..	366, 367
St. Lucia ... ..	367
Somali Coast Protectorate ... ..	368
Straits Settlements ... ..	368
Transvaal ... ..	368–371
Trinidad ... ..	371–373
Turks and Caicos Islands ... ..	373
Uganda Protectorate ... ..	373
Virgin Islands ... ..	374
Wei-hai-wei ... ..	374

Details relating to Persons Employed, Mineral Output, and Accidents at Mines,  
Quarries, and other Mineral Workings in Foreign Countries :—

	PA
Abyssinia ... ..	
Algeria ... ..	375
Arabia... ..	
Argentine Republic...	377
Austria-Hungary ... ..	378
Belgium ... ..	391
Bolivia ... ..	395
Bosnia and Herzegovina ... ..	389
Brazil ... ..	397
Bulgaria ... ..	398
Cameroons ... ..	
Canary Islands ... ..	
Chili ... ..	400
China... ..	402
Colombia ... ..	402
Congo Free State ... ..	
Corea ... ..	
Costa Rica ... ..	
Cuba ... ..	
Denmark ... ..	405
Dutch East Indies ... ..	406
Dutch Guiana or Surinam ... ..	
Dutch West Indies ... ..	
Ecuador ... ..	
Egypt ... ..	409
Eritrea ... ..	
Formosa ... ..	410
France... ..	411
French Guiana ... ..	
German East Africa...	
German Empire ... ..	415
German South West Africa ... ..	
Greece ... ..	435
Guatemala ... ..	
Hayti ... ..	
Holland ... ..	435
Honduras ... ..	
Indo-China ... ..	437
Italy ... ..	438
Ivory Coast ... ..	
Japan ... ..	441
Johore... ..	
Liberia ... ..	
Luxemburg ... ..	
Madagascar ... ..	441
Mexico ... ..	441





# MINES AND QUARRIES:

## GENERAL REPORT AND STATISTICS

For 1904.

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### PART IV.—COLONIAL AND FOREIGN STATISTICS.

---

#### INTRODUCTION.

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This part of the Report is intended to give general information concerning the mining and quarrying industries of the colonies and foreign countries; it is compiled from various official and unofficial sources, which are duly indicated in every case. Great difficulties in preparing this part of the volume arise either from want of adequate official statistics or from the lateness of their publication. In several cases the statistics for 1904 were not received until the present year was well advanced.

The general results are summed up in Tables 280, 281, and 282, and though the figures are not complete, they are sufficient to give a fair general idea of the relative importance of mining in each country.

According to Table 280 the number of persons engaged in mining and quarrying at home and abroad in 1904 was close upon 5 millions. Of this total, roughly speaking, one-fifth were employed in the United Kingdom and one-third in the British Empire. It should be noted, however, that no statistics are published by several countries, *e.g.*, Brazil, China, Persia and Turkey, in which mining is carried on, or for the ore mines and quarries of the United States, and the figure in this Table probably falls considerably short of the real total.

More than half of the total number were employed in getting coal alone; Great Britain employing over 833,000, the United States 594,000, Germany 543,000, France 171,000, Belgium 138,000, Austria 119,000, and India nearly 93,000.

Table 281 summarizes the world's output of the most important minerals in 1904. The total amount of coal produced was 886 million tons, the value of which is estimated at more than 295 million pounds sterling.

The following figures show the main sources from which the fuel supply of the world is obtained :—

Country.	Quantity.		Value.	
	Metric Tons.	Increase or Decrease on 1903.	£	Increase or Decrease on 1903.
United States ... ..	319,613,000	Metric Tons. — 4,577,000	91,338,000	£ — 12,096,000
Great Britain .. ...	236,158,000	+ 2,128,000	83,851,000	— 4,375,000
Germany ... ..	169,450,000	+ 6,993,000	57,298,000	+ 1,669,000
Austria-Hungary ... ..	40,530,000	+ 369,000	10,074,000	— 197,000
France ... ..	34,167,000	— 738,000	18,177,000	— 1,389,000
Belgium ... ..	22,761,000	— 1,035,000	11,465,000	— 894,000

Gold shows an increase of 24,455 kilograms, for which the workings in the British Empire are mainly responsible. The British Empire supplied nearly 60 per cent. of the world's output; Australia contributing 22½ per cent., the Transvaal 22¾ per cent., and Canada 4¾ per cent. of the total. The United States contributed 23½ per cent. The total output was 516,127 kilograms (16,593,856 ozs.) of which the value is estimated at over 67 millions sterling.

In the case of iron, the United States with an output of 16¾ million tons is considerably ahead of any other country. The German Empire with 5½ million tons and Great Britain with about 4½ million tons come next. It is important to point out that the quantities of iron, and indeed the quantities of the other metals included in Table 281, are those which are considered obtainable from the ores raised in the countries in question, and must not necessarily be taken as a measure of their metallurgical industries.

The total value of the figures shown in Table 281 may be roughly taken as representing over 660 millions sterling.

Table 282 shows the loss of life from accidents in mines and quarries, and the death-rates from accidents per 1,000 persons employed.

Taking coal mines for which the figures are fairly complete, it will be seen that the death-rate of the United Kingdom is 1·24, and for the British Empire 1·25; while for France it is 1·07, for Germany 1·90, and for the United States 3·35. The death-rate for foreign countries generally is 2·20.

In the case of gold mines, complete figures are only available for the British Empire. They show a slight fall in the death-rate from 2·61 to 2·55.

Home Office, Whitehall,

4th April, 1906.

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SUMMARIES.

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PERSONS EMPLOYED—OUTPUT—ACCIDENTS,  
1903-1904.

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TABLE No. 280.

SUMMARY of the number of PERSONS EMPLOYED at MINES, QUARRIES, and other MINERAL WORKINGS in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the YEARS 1903 and 1904.

Country.	1903.	1904.
GREAT BRITAIN AND IRELAND ... ..	970,044	974,684
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS :—		
Aden ... ..	*	*
Australia ... ..	112,672	111,448
Bahamas ... ..	354	203
Barbados ... ..	100†	233
Basutoland ... ..	*	*
Bechuanaland Protectorate ... ..	*	*
British Borneo ... ..	500	500
British Central Africa Protectorate ... ..	*	*
British East Africa Protectorate ... ..	*	*
British Guiana ... ..	12,025	11,241
British New Guinea ... ..	250	275
British Solomon Islands... ..	*	*
Canada (a)... ..	34,213	35,748
Cape Colony ... ..	18,151	19,286
Ceylon ... ..	74,218	65,728
Channel Islands ... ..	1,200	1,200
Christmas Island ... ..	550†	550†
Cyprus ... ..	*	205
Federated Malay States ... ..	186,337	192,669
Gambia ... ..	*	*
Gold Coast... ..	6,779	17,044
India ... ..	144,788	153,680
Malta ... ..	1,060†	1,060†
Natal (including Zululand) ... ..	4,405	4,792
Newfoundland ... ..	2,067	2,375
New Zealand ... ..	13,062	13,498
Nigeria ... ..	*	*
Orange River ... ..	5,431§	6,085
Redonda ... ..	66	99
Rhodesia ... ..	7,593	11,717¶
St. Lucia ... ..	*	*
Somali Coast Protectorate ... ..	*	*
Straits Settlements ... ..	*	*
Transvaal ... ..	82,522	104,236
Trinidad ... ..	*	1,271
Turks and Caicos Islands ... ..	*	1,200
Uganda Protectorate ... ..	*	*
Virgin Islands ... ..	*	*
Wei-hai-wei ... ..	*	*
<b>TOTAL for BRITISH EMPIRE ... ..</b>	<b>1,678,327**</b>	<b>1,730,977</b>
FOREIGN COUNTRIES :—		
Austria-Hungary ... ..	225,104	225,371
Bosnia and Herzegovina ... ..	2,608	2,288
Belgium ... ..	177,652	177,308
Bulgaria ... ..	1,688	2,305
Chili ... ..	46,592**	46,592††
Corea ... ..	1,236†	1,236†
Denmark ... ..	—	—
Greenland ... ..	76	36
France ... ..	321,883	322,356
Algeria ... ..	7,890	9,861
Indo-China ... ..	3,290**	3,290††
Ivory Coast ... ..	—	90
Madagascar ... ..	3,000	3,000
New Caledonia ... ..	5,090†	5,090†
Tunis ... ..	1,803	2,225
German Empire ... ..	783,646††	814,352††
Greece ... ..	10,135**	10,200
Holland ... ..	4,699	4,774
Dutch East Indies ... ..	26,388	27,595
Italy ... ..	125,417	125,055
Japan ... ..	163,530	163,530††
Luxemburg ... ..	6,024	6,262
Mexico ... ..	78,089**	78,089††
Norway ... ..	2,868**	3,218
Panama ... ..	1,000	1,000††
Peru ... ..	105,000†	105,000†
Portugal ... ..	9,263§§	8,684§§
Roumania ... ..	*	*
Russia ... ..	344,245	344,245
Servia ... ..	2,436	2,139
Siam ... ..	26,250	26,250
Spain ... ..	94,364	93,375
Sweden ... ..	14,422	14,225
Switzerland ... ..	1,687	1,368
United States ... ..	592,294(b)	607,079(c)
<b>TOTAL for FOREIGN COUNTRIES ... ..</b>	<b>3,189,669**</b>	<b>3,237,488</b>
<b>TOTAL for the WORLD ... ..</b>	<b>4,867,996**</b>	<b>4,968,465</b>

\* Information not available.

† Figures for 1898.

‡ Figures for 1900.

§ For six months only.

|| Matabele Mines only.

¶ Matabele and Mashonaland Mines only.

\*\* Revised figures.

†† Figures for 1903.

‡‡ These figures include the average number of persons employed full time at Quarries see p. 424.

§§ Including persons employed at Quarries for 1890.

||| Figures for 1902.

(a) For British Columbia, Nova Scotia, Ontario, and Quebec only.

(b) Coal Miners and only Ore Miners of Michigan (Houghton Co.) and Missouri.

(c) Coal Mines and only Ore Miners of Missouri.

BY OF OUTPUT\* OF CERTAIN MINERALS AND METALS (contained in or obtained from Ore raised in the individual Countries) in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the Year 1904.

[illegible]

one or two cases in which the figures of  
of minerals are not obtainable the quan-  
ported is given. Fuller particulars will be  
in the detailed tables.  
timated.  
ures for 1900.

§ Figures for 1903.  
 || Converted into fine silver, on the total value of ingots, matte, ore, and sulphide exported.  
 ¶ Figures for 1901.  
 \*\* Output from certain Provinces only.  
 †† Figures for 1902.

(a) Including some metal obtained from imported ore.



TABLE No. 282,

## SUMMARY of ACCIDENTS at MINES, QUARRIES, and other MINERAL WORKINGS in the

COUNTRY.	DEATHS FROM ACCIDENTS.											
	1903.						1904.					
	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.
GREAT BRITAIN AND IRELAND ..	1,048	—	49	1,097	95	1,192	1,034	—	56	1,090	112	1,202
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—												
Aden* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Australia:—												
New South Wales .. .. .	13	7	16	36	—	—	12	11	18	41	—	—
Queensland .. .. .	—	18	9	27	—	—	1	26	4	31	—	—
South Australia .. .. .	—	—	—	—	—	—	—	—	—	7	—	—
Tasmania .. .. .	—	—	—	14	—	—	—	—	—	9	—	—
Victoria .. .. .	1	21	—	22	—	—	2	17	—	19	—	—
Western Australia .. .. .	1	41	1	43	—	—	—	41	1	42	—	—
Bahamas* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Barbados* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Basutoland* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Bechuanaland Protectorate* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
British Borneo* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
British Central Africa Protectorate* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
British East Africa Protectorate* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
British Guiana .. .. .	—	4	—	4	—	4	—	1	—	1	—	1
British New Guinea* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
British Solomon Islands* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Canada:—												
British Columbia .. .. .	42	†	18	60	—	—	37	†	14	51	—	—
Nova Scotia .. .. .	24	—	—	—	—	—	26	—	—	—	—	—
Ontario .. .. .	—	2	5	7	—	—	—	6	1	7	—	—
Quebec .. .. .	—	—	—	—	—	1	—	—	—	—	—	4
Cape Colony .. .. .	3	—	32‡	—	—	—	6	—	32‡	—	—	—
Ceylon .. .. .	—	—	—	17	2	19	—	—	—	18	1	19
Channel Islands* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Christmas Island* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Cyprus* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Federated Malay States .. .. .	—	—	—	63	—	—	—	—	—	79	—	—
Gambia* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Gold Coast .. .. .	—	15	—	15	—	—	—	14	—	14	—	—
India .. .. .	97	71	17	185	—	—	67	46	17	130	—	—
Malta* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Natal (including Zululand)§ .. .. .	13	—	—	—	—	—	16	—	—	—	—	—
Newfoundland .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
New Zealand .. .. .	4	19	—	—	2	6	4	15	—	19	2	4
Nigeria* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Orange River .. .. .	—	—	—	71	—	—	—	—	—	19	—	—
Redonda* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Rhodesia* .. .. .	—	—	—	50	—	—	—	—	—	—	—	—
St. Lucia* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Somali Coast Protectorate* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Straits Settlements* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Transvaal .. .. .	32	310	16‡	358‡	—	—	18	393	24	435	1	18
Trinidad* .. .. .	—	—	—	—	—	—	—	—	—	17	—	—
Turks and Caicos Islands* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Uganda Protectorate* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Virgin Islands* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Wei-hai-wei* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL FOR BRITISH EMPIRE ..	1,278	508	—	—	—	—	1,223	570	—	—	—	—
FOREIGN COUNTRIES:—												
Austria-Hungary:—												
Austria .. .. .	103	—	12	115	—	—	110	—	14	124	—	—
Hungary .. .. .	—	—	—	98	—	—	—	—	—	112	—	—
Bosnia and Herzegovina .. .. .	1	—	—	1	—	—	3	—	1	4	—	—
Belgium .. .. .	159	—	1	160	31	191	129	—	—	129	32	161
Bulgaria .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
France .. .. .	170	—	45	215	144	359	184	—	41	225	153	378
Algeria .. .. .	—	—	—	5	14	19	—	—	—	4	8	12
German Empire .. .. .	1,046	—	113**	1,159**	23‡‡	1,393‡‡	1,034	—	144**	1,178**	206	1,387**
Greece* .. .. .	—	—	—	13‡	—	—	—	—	—	—	—	—
Holland .. .. .	4	—	—	4	—	—	3	—	—	3	—	—
Italy .. .. .	—	—	—	110	44	154	—	—	—	120	59	179
Japan* .. .. .	215	—	94	309	—	—	—	—	—	—	—	—
Mexico* .. .. .	—	—	—	308	—	—	—	—	—	—	—	—
Norway* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Peru* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Portugal .. .. .	—	—	4	4	—	—	1	—	2	3	—	—
Roumania* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Russia* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Servia .. .. .	—	—	—	2	—	—	—	—	—	6	—	—
Spain .. .. .	—	—	—	240	—	—	—	—	—	323	—	—
Sweden .. .. .	—	—	—	—	—	25	—	—	—	—	—	23
Switzerland .. .. .	—	—	—	2	2	4	—	—	—	1	—	—
United States .. .. .	1,740‡‡‡	—	11	—	—	—	1,996‡‡	—	11	—	—	—
TOTAL FOR FOREIGN COUNTRIES.	3,438‡	—	—	—	—	—	3,460	—	—	—	—	—
TOTAL for the WORLD ..	4,716‡	—	—	—	—	—	4,683	—	—	—	—	—

\* Information for 1904 not available.

† Included with other mines.

‡ Kimberley Diamond Mines only.

§ The accidents at coal mines relate to producing collieries only.

|| Revised figures.

¶ No death-rate calculated for reasons given on page 367.



TABLE No. 282.

BRITISH EMPIRE and in FOREIGN COUNTRIES during the Years 1903 and 1904.

DEATH-RATES PER 1,000 PERSONS EMPLOYED.												COUNTRY.
1903.						1904.						
Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	
1'26	—	1'14	1'26	'97	1'23	1'24	—	1'29	1'24	1'15	1'23	GREAT BRITAIN AND IRELAND.
—	—	—	—	—	—	—	—	—	—	—	—	BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—
'92	'82	1'31	'86	—	—	'85	1'03	1'38	1'08	—	—	Aden.*
—	1'95	2'26	1'88	—	—	'75	2'70	'90	2'01	—	—	Australia:—
—	—	—	—	—	—	—	—	—	'86	—	—	New South Wales.
—	—	—	2'33	—	—	—	—	—	1'45	—	—	Queensland.
3'85	'83	—	'86	—	—	3'40	'70	—	'76	—	—	South Australia.*
2'49	2'37	2'05	2'36	—	—	—	2'43	2'21	2'38	—	—	Tasmania.
—	—	—	—	—	—	—	—	—	—	—	—	Victoria.
—	—	—	—	—	—	—	—	—	—	—	—	Western Australia.
—	—	—	—	—	—	—	—	—	—	—	—	Bahamas.*
—	—	—	—	—	—	—	—	—	—	—	—	Barbados.*
—	—	—	—	—	—	—	—	—	—	—	—	Basutoland.*
—	—	—	—	—	—	—	—	—	—	—	—	Bechuanaland Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	British Borneo.*
—	—	—	—	—	—	—	—	—	—	—	—	British Central Africa Protectorate.*
—	'33	—	'33	—	'33	—	'09	—	'09	—	'09	British East Africa Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	British Guiana.
—	—	—	—	—	—	—	—	—	—	—	—	British New Guinea.*
—	—	—	—	—	—	—	—	—	—	—	—	British Solomon Islands.*
9'85	†	7'27	8'90	—	—	8'31	†	4'23	6'44	—	—	Canada:—
2'16	—	—	—	—	—	2'23	—	—	—	—	—	British Columbia.
—	3'87	2'36	2'33	—	—	—	26'09	'94	3'16	—	—	Nova Scotia.
—	—	—	—	—	'21	—	—	—	—	—	'79	Ontario.
1'30	—	2'06‡	—	—	'26	2'23	—	2'26‡	—	—	—	Quebec.
—	—	—	'36	'08	—	—	—	—	'43	'04	'29	Cape Colony.
—	—	—	—	—	—	—	—	—	—	—	—	Ceylon.
—	—	—	—	—	—	—	—	—	—	—	—	Channel Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Christmas Island.*
—	—	—	'34	—	—	—	—	—	'41	—	—	Cyprus.*
—	—	—	—	—	—	—	—	—	—	—	—	Federated Malay States.
—	—	—	—	—	—	—	—	—	—	—	—	Gambia.*
—	2'21	—	2'21	—	—	—	'82	—	'82	—	—	Gold Coast.
1'13	2'48	'61	1'28	—	—	'72	1'60	'57	'85	—	—	India.
2'85	—	—	—	—	—	3'34	—	—	—	—	—	Malta.*
—	—	—	—	—	—	—	—	—	—	—	—	Natal (including Zululand).‡
1'40	1'88	6'41	6'41	1'39	2'90	1'22	1'38	3'51	3'51	1'11	1'68	Newfoundland.*
—	—	—	—	—	—	—	—	—	—	—	—	New Zealand.
—	—	—	1'29	—	—	—	—	—	3'12	—	—	Nigeria.*
—	—	—	—	—	—	—	—	—	—	—	—	Orange River.
—	—	—	—	—	—	—	—	—	—	—	—	Redonda.*
—	—	—	—	—	—	—	—	—	—	—	—	Rhodesia.*
—	—	—	—	—	—	—	—	—	—	—	—	St. Lucia.*
—	—	—	—	—	—	—	—	—	—	—	—	Somali Coast Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	Straits Settlements.*
4'05	4'4	3'57‡	4'34‡	—	—	2'10	4'36	4'29	4'17	—	—	Transvaal.
—	—	—	—	—	—	—	—	—	168'32	'85	14'16	Trinidad.*
—	—	—	—	—	—	—	—	—	—	—	—	Turks and Caicos Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Uganda Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	Virgin Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Wei-hai-wei.*
1'33	2'61	—	—	—	—	1'25	2'55	—	—	—	—	TOTAL FOR BRITISH EMPIRE
FOREIGN COUNTRIES:—												
'85	—	'52	'80	—	—	'92	—	'78	'90	—	—	Austria-Hungary:—
—	—	—	1'36	—	—	—	—	—	—	—	—	Austria.
'59	—	—	'41	—	—	2'19	—	1'48	1'86	—	—	Hungary.
1'14	—	1'06	1'14	'84	1'08	'93	—	—	'93	'84	'91	Bosnia and Herzegovina.
—	—	—	—	—	—	—	—	—	—	—	—	Belgium.
1'02	—	2'72	1'17	1'04	1'12	1'07	—	2'34	1'19	1'15	1'17	Bulgaria.
—	—	—	1'43	3'19	2'41	—	—	—	1'12	1'27	1'22	France.
2'00	—	—	1'87††	1'53‡	1'78‡	1'90	—	—	1'81††	1'32	1'71	Algeria.
—	—	—	1'28‡	—	—	—	—	—	—	—	—	German Empire.
1'91	—	—	1'91	—	—	1'39	—	—	1'39	—	—	Greece.*
—	—	—	1'75	'75	1'28	—	—	—	1'92	1'00	1'47	Holland.
2'53	—	1'30	1'97	—	—	—	—	—	—	—	—	Italy.
—	—	—	3'94	—	—	—	—	—	—	—	—	Japan.*
—	—	—	—	—	—	—	—	—	—	—	—	Mexico.*
—	—	—	—	—	—	—	—	—	—	—	—	Norway.*
—	—	—	—	—	—	—	—	—	—	—	—	Peru.*
—	—	1'00	'88	—	—	2'05	—	'58	'78	—	—	Portugal.
—	—	—	—	—	—	—	—	—	—	—	—	Roumania.*
—	—	—	—	—	—	—	—	—	—	—	—	Russia.*
—	—	—	'86	—	—	—	—	—	2'97	—	—	Servia.
—	—	—	2'54	—	—	—	—	—	3'45	—	—	Spain.
—	—	—	—	—	1'73	—	—	—	—	—	1'55	Sweden.
—	—	—	4'46	1'61	2'37	—	—	—	—	—	—	Switzerland.
3'11‡‡	—	‡‡	—	—	—	3'35‡‡	—	‡‡	—	—	—	United States.
2'15‡	—	—	—	—	—	2'20	—	—	—	—	—	TOTAL FOR FOREIGN COUNTRIES.
1'81‡	—	—	—	—	—	1'84	—	—	—	—	—	TOTAL for the WORLD.

\*\* Including accidents at Smelting Works.

†† This death-rate represents the persons insured in the mining and smelting branch of the German Official Insurance Association. For true mining death-rates in Prussia see p. 429.

‡‡ The figures relate to 19 of the principal coal-producing States.

§§ Information for ore mines incomplete, see p. 430.





## BRITISH EMPIRE.

## GREAT BRITAIN AND IRELAND,

WITH THE

## ISLE OF MAN.

The following Tables, 283 to 288, summarize the results of Parts II. and III. of the General Report:—

TABLE 283.

PERSONS EMPLOYED at all the MINES during the Years 1903 and 1904.

Year.	Total Number of Mines at Work.	Under-ground.			Above-ground.			Total Under and Above Ground.
		Males.	Females.	Total.	Males.	Females.	Total.	
1903	4,122	694,317	None	694,317	171,924	5,648	177,572	871,889
1904	4,006	698,967	None	698,967	172,342	5,748	178,090	877,057
Increase or decrease	- 116	+ 4,650	—	+ 4,650	+ 418	+ 100	+ 518	+ 5,168

TABLE 284.

PERSONS EMPLOYED at QUARRIES more than 20 feet deep during the Years 1903 and 1904.

Year.	Total Number of Quarries at Work.	INSIDE THE QUARRIES, i.e., inside the actual pits, holes, or excavations.			OUTSIDE THE QUARRIES, i.e., outside the actual pits, holes, or excavations.			Total Number of Persons Employed Inside and Outside the Quarries.
		Males.	Females.	Total Inside.	Males.	Females.	Total Outside.	
1903	7,376	62,915	6	62,921	35,202	32	35,234	98,155
1904	7,507	62,244	5	62,249	35,291	37	35,328	97,577
Increase or decrease	+ 131	- 671	- 1	- 672	+ 89	+ 5	+ 94	- 578



GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—*continued.*

TABLE 286.

SUMMARY of the METALS obtainable by SMELTING from the ORES in the preceding TABLE.

Metal,	1903.			1904.		
	Quantity.		Value at the Average Market Price.	Quantity.		Value at the Average Market Price.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Aluminium ... ..	(a)	—	(a)	(a)	—	—
Copper ... ..	536	545	33,790	493	501	31,065
Gold (Bar) ... ..	ozs. 5,495	kilos. 171	19,308	ozs. 19,655	kilos. 611	73,925
Iron ... ..	4,500,972	4,573,202	14,196,841	4,524,412	4,597,018	13,218,195
Lead ... ..	19,958	20,278	234,839	19,838	20,156	239,544
Silver ... ..	ozs. 174,891	kilos. 5,440	18,086	ozs. 159,689	kilos. 4,967	17,549
Sodium ... ..	(a)	—	(a)	(a)	—	—
Tin ... ..	4,282	4,351	544,122	4,132	4,198	530,566
Zinc ... ..	9,281	9,430	200,470	10,263	10,428	237,546
Total values ... ..	—	—	15,247,406	—	—	14,348,390

(a) Information not supplied.

TABLE 287.

FATAL ACCIDENTS and DEATHS at all the MINES during the Years 1903 and 1904.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate from Accidents.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.	Per 1,000 Persons employed Under-ground.	Per 1,000 Persons employed Above-ground.	Per 1,000 Persons employed Under and Above Ground
1903 ... ..	903	158	1,061	938	159	1,097	1·35	·90	1·26
1904 ... ..	901	147	1,048	942	148	1,090	1·35	·83	1·24
Increase or decrease ...	— 2	— 11	— 13	+ 4	— 11	— 7	=	— ·07	— ·02

TABLE 288.

DEATHS from ACCIDENTS at QUARRIES\* during the Years 1903 and 1904.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate per 1,000 Persons employed.		
	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.
1903 ... ..	79	11	90	84	11	95	1·34	·31	·97
1904 ... ..	94	16	110	96	16	112	1·34	·45	1·15
Increase or decrease ...	+ 15	+ 5	+ 20	+ 12	+ 5	+ 17	+ ·20	+ ·14	+ ·18

\* More than 20 feet deep.

## BRITISH COLONIES AND DEPENDENCIES.

### Aden.

Salt is made by the evaporation of sea-water, and the Government revenue is partly obtained from duty upon this product.

TABLE 289.

	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
Salt* ...	Statute Tons. 71,656	Metric Tons. 72,806	£ 28,434	Statute Tons. 66,007	Metric Tons. 67,066	£ 24,679

### Australia.

The principal mineral product of the Commonwealth of Australia is gold. The output in 1904 was 3,752,827 ozs. (116,725 kils.) of fine gold, or roughly speaking one-fifth of the total quantity raised in the world. The most productive of the six States is Western Australia, with an output slightly under two million ounces of fine gold or considerably more than twice as large as that of any one of its sisters. These in order of production may be arranged as follows:—Victoria, Queensland, New South Wales, Tasmania, and South Australia.

The Commonwealth produced nearly 7 million tons of coal in 1904; about 88 per cent. of the total was furnished by New South Wales.

Tasmania is still the principal copper producing State, due mainly to the yield of the Mount Lyell district. South Australia and New South Wales come next in order of importance.

The famous mines at Broken Hill in New South Wales produce far more silver lead ore than all the other five States put together.

Full details concerning each individual State will be found under its own special heading.

TABLE 290.

PERSONS EMPLOYED at all MINES† in the COMMONWEALTH of AUSTRALIA during the Years 1903 and 1904.

State.	1903.			1904.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
New South Wales	†	†	37,559	†	†	37,837
Queensland ...	†	†	14,538	†	†	15,398
South Australia ...	†	†	7,283	†	†	7,397
Tasmania ...	†	†	6,017	†	†	6,194
Victoria ...	†	†	25,669	†	†	25,007
Western Australia	9,815	11,791	21,606	9,337	10,278	19,615
Total ...	—	—	112,672	—	—	111,448

\* *Statistics of Mineral Production in India in the ten years 1894 to 1903.* Calcutta, 1904, p 2; and *Records of the Geological Survey of India.* Vol. xxxiii., Part I., 1906. Calcutta, p. 18.

† Including persons employed at alluvial gold workings.

‡ Not stated.



## AUSTRALIA—continued.

TABLE 291.

QUANTITY and VALUE of MINERAL produced in the COMMONWEALTH OF AUSTRALIA during the Years 1903 and 1904.

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alunite ... ..	2,485	2,525	6,212	370	376	925
Antimony and Antimony Ore.	40	40	415	129	131	663
Asbestos ... ..	cwt. 4	kilos. 203	10	—	—	—
Bismuth ... ..	22	22	9,537	40	41	12,344
" Ore ... ..	11	11	2,523	20	20	3,581
Bluestone ... ..	50,662	51,475	7,133	20,509	20,838	4,263
Brown Coal ... ..	5,661	5,752	2,827	—	—	—
Chrome Iron Ore ...	1,951	1,982	7,342	397	403	1,268
Clays ... ..	—	—	14,500	—	—	—
Coal ... ..	7,109,343	7,223,430	2,636,113	6,853,224	6,963,202	2,350,812
Cobalt ... ..	153	155	1,570	5	5	60
Coke ... ..	160,592	163,169	108,764	171,006	173,750	110,692
Copper ... ..	26,057†	26,475†	1,618,915†	26,066	26,483	1,637,683
" Ore, Matte and Regulus.	23,174†	33,706†	220,339†	9,542	5,606	96,439
Diamonds ... ..	carats 12,239	grams 2,514	9,987	carats 14,296	grams 2,836	11,620
Gems, other than opal ...	—	—	7,000	—	—	10,575
Gold (Fine) ... ..	ozs. 3,836,044	kilos. 119,314	16,294,475†	ozs. 3,752,827	kilos. 116,725	15,940,977
Gold Ore and Concentrates	22	22	154	—	—	—
Granite ... ..	4,271	4,340	905	350	356	750
Gypsum ... ..	3,590	3,648	897	3,620	3,678	1,905
Infusorial Earth ... ..	400	406	2,400	—	—	—
Iron Ore ... ..	15,788	16,041	6,757	11,264	11,445	4,634
" Oxide of ... ..	1,194	1,213	1,182	415	422	239
Ironstone, Flux ... ..	22,340	22,699	15,922	56,790	57,701	34,296
Lead, Carbonate* ... ..	57	58	228	—	—	—
" Pig ... ..	7,963	8,001	90,796	7,929	8,056	90,524
Limestone ... ..	40,754	41,408	16,384	94,373	95,888	45,255
Manganese Ore ... ..	1,403	1,425	5,605	830	843	3,540
Molybdenite ... ..	29	29	4,458	27	27	2,924
Oil Shale ... ..	34,776	35,334	28,617	37,871	38,479	26,770
Opal ... ..	—	—	107,300	—	—	60,550
Platinum ... ..	ozs. 530	kilos. 16	1,061	ozs. 535	kilos. 17	1,070
Plumbago ... ..	—	—	—	cwt. 1	kilos. 51	2
Porphyry ... ..	29,204	29,673	1,383	35,216	35,781	1,394
Quicksilver ... ..	lbs. 1,010	kilos. 458	126	—	—	—
Salt ... ..	40,054†	40,697†	50,087†	42,737	43,423	52,053
Sandstone ... ..	6,280	6,381	2,931	3,054	3,103	827
Scheelite ... ..	3	3	140†	16	16	1,481
Silver ... ..	ozs. 1,945,497	kilos. 60,511	202,130	ozs. 2,204,174	kilos. 68,556	244,416
Silver Lead Ore ... ..	391,697	397,983	1,581,407	448,525	455,723	2,147,373
Tin Ingots ... ..	3,309†	3,362†	420,876†	3,139	3,159	392,188
" Ore ... ..	5,276	5,362	341,406	6,036	6,136	420,086
Volcanic Ash ... ..	39,609	40,245	3,136	Not stated	—	Not stated.
Wolfram ... ..	206†	209†	8,478†	1,671	1,697	173,938
Zinc Ore ... ..	20,754	21,087	86,587	59,534	60,489	119,960
Sundries (including some Building Stone).	—	—	213,673	—	—	377,280
Total ... ..	—	—	24,142,688†	—	—	24,385,357

\* Product of the leaching plants at Broken Hill, New South Wales.

† Revised figures.

‡ Value included with Sundries.



## AUSTRALIA—continued.

TABLE 292.

ACCIDENTS at all MINES in the COMMONWEALTH of AUSTRALIA during the Years 1903 and 1904.

State.	1903.		1904.	
	Number of Deaths from Accidents.	Death-rate per 1,000 persons employed.	Number of Deaths from Accidents.	Death-rate per 1,000 persons employed.
New South Wales ... ..	36	·96	41	1·08
Queensland ... ..	27	1·86	31	2·01
South Australia ... ..	*	*	2†	1·48†
Tasmania ... ..	14	2·33	9	1·45
Victoria ... ..	22	·86	19	·76
Western Australia ... ..	43	2·36‡	42	2·38
Total ... ..	142	1·39	144	1·39

## NEW SOUTH WALES.§

Coal and the ores of copper, gold, lead and silver are the principal minerals worked in this State.

*Coal.*—The existence of seams of coal was known in very early days and was the reason for the name of the State. It is reckoned that New South Wales has altogether yielded 115,761,725 tons of coal, valued at £46,016,055 of which more than 114 millions have been obtained since 1857. The output did not reach one million tons annually till the year 1872; last year it exceeded six millions. Nearly 2 million tons were exported to Australian Ports, and over 1½ millions to places outside the Commonwealth, leaving nearly 3 millions available for home consumption.

Excluding lignite and seams of Triassic age, it is reckoned that the main coal-bearing rocks of the Colony extend over an area of 24,000 to 28,000 square miles around the seaport of Sydney.

*Copper.*—There was a decrease of £42,253 in the value of the copper produced from ores raised in the State in 1904 as compared with the year 1903, which is accounted for by a cessation of productive work at Lloyd Mine, Burraga. The Great Cobar copper mine continues to maintain its position as the principal copper mine of the State.

*Diamonds.*—Diamonds are found in several parts of the Colony; but the bulk of those obtained in 1904 came from the deposits in the Tingha Division.

*Gold.*—The quantities of gold in Table 294 relate only to metal obtained from ores mined in the State. There was an increase of 29,218 ozs. of crude gold, equal to 15,557 ozs. fine, in the output of 1904 compared with 1903. The most important gold-yielding districts during the year were Bathurst, Cobar, Lachlan, Mudgee, Peel and Uralla, Southern, and Tumut and Adelong. The Cobar field produced nearly one-fourth of the total output of 269,817 ozs. of fine gold.

Dredging for gold made steady progress in 1904. There were several "bucket" and "suction" dredges at work during the year, and the quantity obtained thereby was 32,345 ozs. The chief centre of the gold-dredging operations is still in the Araluen Division, where 16,870 ozs. were obtained in 1904.

*Silver and lead.*—The ores of silver and silver-lead show an increased value of £564,137 in 1904. The silver and lead mining of the Colony is practically concentrated at Broken Hill, in the Albert Mining District.

*Tin ore.*—The chief supply of tin ore is obtained from the stanniferous gravels. 319 tons, valued at £26,180, were obtained by means of dredging during the year. The workings for lode tin are principally carried on at Torrington and Silent Grove in the Deepwater Division.

\* Not stated.

† For Northern Territory only.

‡ Exclusive of alluvial gold workers.

§ Annual Report of the Department of Mines for 1904. Sydney, 1905.



## AUSTRALIA.—NEW SOUTH WALES—continued.

TABLE 293.

PERSONS EMPLOYED at all MINES during the Years 1903 and 1904.\*

Kind of Mines.	1903.			1904.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	10,910	3,007	13,917	11,122	2,922	14,034
Copper ... ..	—	—	1,816	—	—	1,850
Gold { alluvial ...	—	—	5,906	—	—	5,253†
	quartz ...	—	5,341	—	—	5,395
Shale ... ..	138	62	200	72	40	112
Silver, Lead and Zinc.	—	—	6,035	—	—	7,071
Tin... ..	—	—	2,502	—	—	2,745†
Other mines ...	—	—	1,842	—	—	1,377
Total ... ..	—	—	37,559	—	—	37,837

TABLE 294.

QUANTITY and VALUE of MINERALS produced during the Years 1903 and 1904.§

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Alunite ... ..	2,485	2,525	6,212	370	376	925
Antimony and Antimony ore ...	13	13	135	109	111	503
Bismuth ... ..	22	22	9,537	40	41	12,329
Chrome iron ore ... ..	1,951	1,982	7,342	397	403	1,268
Coal ... ..	6,354,846	6,456,826	2,319,660	6,019,809	6,116,412	1,994,952
Cobalt ... ..	153	155	1,570	5	5	60
Coke ... ..	160,592	163,169	108,764	171,006	173,750	110,692
Copper (ingots) ... ..	7,967††	8,095	438,733††	6,549	6,654	376,325
„ (ore and regulus)... ..	1,722††	1,750	23,907††	2,358	2,396	44,062
Diamonds ... ..	carats 12,239	grams 2,514	9,987	carats 14,296	grams 2,936	11,620
Gold (fine)  ... ..	ozs. 254,260	kilos. 7,908	1,080,029	ozs. 269,817	kilos. 8,392	1,146,109
Iron stone flux¶ ... ..	22,120	22,475	15,834	8,661	8,800	6,628
Iron, oxide of (exported) ... ..	1,194	1,213	1,182	415	422	239
Lead (pig)** ... ..	3,448	3,503	38,358	5,883	5,977	65,964
„ (carbonate)†† ... ..	57	58	228	—	—	—

\* Annual Report of the Department of Mines for 1903, pp. 4 and 79; and for 1904, pp. 4 and 94.

† Including 327 Chinese.

‡ 595

§ Annual Report of the Department of Mines for 1903, pp. 2, 9, 39, 44, and 48.

|| The quantities of Crude gold were 295,778 ozs. in 1903, and 324,996 ozs. in 1904.

¶ Used for metallurgical works.

\*\* See footnote on p. 320 as to total quantity of metallic lead.

†† The lead carbonate is a product of the leaching plants at Broken Hill.

‡‡ Corrected figures.

AUSTRALIA.—NEW SOUTH WALES—continued.

TABLE 294—continued.

Mineral.	1903			1904		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Limestone (flux) ... ..	23,824	24,206	14,221	24,975	25,376	14,434
Manganese ore ... ..	73	74	254	—	—	—
Molybdenite ... ..	29	29	4,458	25	25	2,726
Oil shale ... ..	34,776	35,334	28,617	37,871	38,479	26,770
Opal ... ..	—	—	100,000	—	—	57,000
Platinum ... ..	ozs. 530	kilos. 16	1,061	ozs. 535	kilos. 17	1,070
Quicksilver ... ..	lbs. 1,010	Kilos. 458	126	—	—	—
Scheelite ... ..	3†	3	140†	15	15	1,406
Silver (ingots and matte)* ...	ozs. 1,099,373	kilos. 34,194	113,755	ozs. 1,121,402	kilos. 34,879	123,256
Silver lead and ore* ... ..	349,064	354,666	1,387,648	397,220	403,594	1,942,284
Tin (ingots) ... ..	933†	948	120,778†	1,068	1,085	136,960
„ ore ... ..	547	556	29,430	576	588	47,825
Zinc (Metal and concentrates)*...	20,754	21,087	86,587	57,603	58,527	117,978
Wolfram ... ..	9†	9	608†	89	90	8,432
Sundry minerals (including building stone, &c.).	—	—	81,304†	—	—	70,237
Total value ... ..	—	—	†6,030,465	—	—	6,322,054

TABLE 295.

DEATHS from ACCIDENTS at all MINES during the Years 1903 and 1904.†

Kind of Mines or Workings.	1903.		1904.	
	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.
Coal and shale ... ..	13	·92	12	·85
Gold { alluvial & dredging	1	·17	4	·76
{ quartz ... ..	6	1·12	7	1·30
Silver Lead and Zinc ... ..	14	2·32	14	1·98
Other mines... ..	2	·32	4	·67
Total ... ..	36	·96	41	1·08

TABLE 296.

DEATHS from ACCIDENTS at COAL and SHALE MINES during the Years 1903 and 1904.§

Year.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
1903 .. ..	10	3	13	·91	·98	·92
1904 ... ..	12	—	12	1·07	—	·85

\* The total metallic contents of the ores of Lead, Silver, and Zinc raised in the state during the year are given on page 38 of the Annual Report of the Department of Mines for 1904 as follows:—Fine Silver 10,696,725ozs., Lead 165,545 tons Zinc 22,617 tons.  
† Corrected figures.  
‡ Annual Report of the Department of Mines for 1903, pp. 5, 65, and 90, and 1904, pp. 5, and 64.  
§ „ „ for 1903, pp. 86 and 87. and for 1904, p. 101.



AUSTRALIA.—NEW SOUTH WALES—*continued.*

The following table (No. 297) gives the number of cases of lead-poisoning at the Broken Hill Mines which have been reported during the past nine years. There was a considerable diminution in the number of cases reported in 1904 as compared with the figures for the two preceding years.

TABLE 297.  
BROKEN HILL MINES.\*

Year.	Number of Persons Employed.	Cases of Lead Poisoning Reported.	Percentage of Persons Affected.
1896	5,400	44	·81
1897	5,816†	17	·29†
1898	6,003†	14	·23†
1899	7,252	13	·18
1900	7,392†	5	·07
1901	5,610†	13	·23†
1902	4,983	56	1·12
1903	5,626†	40	·71†
1904	6,758	26	·38

In addition to the above cases of lead poisoning which occurred amongst the men employed in the mines, the following are reported as having happened to persons engaged at the metal works, viz. : 69 in the year 1899 ; 58 in 1900 ; 2 in 1903 ; and 3 in 1904.

*Legislation.*—The following Acts relating to mining were passed during the year :—

No. 11. "The Coal Mines Regulation (Inspection) Act, 1904," which allows practical men, who are no longer working miners, to be appointed inspectors on behalf of the men employed in coal mines.

No. 13. "The Miners' Accident Relief (Validating) Act, 1904," which validates (1) the appointment of certain Officers of the Miners' Accident Relief Board, and (2) the acts and appointment of certain committees purporting to be constituted under the Miners' Accident Relief Act, 1900.

No. 21. "The Mines Inspection Amendment Act, 1904," which provides for the appointment and payment of checkweighmen or checkclerks in metalliferous mines.

## QUEENSLAND.†

The total value of mineral output of Queensland for 1904 exceeds that of the preceding year by £9,196, and is due to a large increase in the output of Wolfram. Gold, Copper, and Lead all show a decreased production.

*Copper.*—The deficiency in the value of the output of copper is regarded as only temporary, and it is expected that the year 1905 will show a considerable expansion of this branch of the mining industry.

*Gold.*—The value of the yield was £2,714,934 a decrease on that of the previous year by £124,876.

Charters Towers maintained its position as the most productive field in Queensland with an output of 384,763 ozs. of crude or 262,018 ozs. fine gold in 1904 ; Mount Morgan comes next with a production of 144,285 ozs. crude or 131,020 ozs. fine, and the Gympie, Kilkivan, Glastonbury, &c., goldfield third with 155,226 ozs. crude or 126,710 ozs. fine.

*Manganese Ore.*—Considerable quantities of low grade manganese ore exist in the Gladstone, Rockhampton, Bundaberg, Ipswich and Warwick Districts, but the very limited local demand and the difficulty of establishing an export trade for manganese affords little encouragement for development of the deposits.

*Tin Ore.*—The Herberton mineral field continues to be the main source of supply, and last year furnished 2,875 tons, or more than two-thirds of the total quantity obtained.

\* Annual Report of the Department of Mines for 1904, p. 65.

† Revised figures.

‡ Annual Report of the Under-Secretary for Mines for 1904. Brisbane, 1905.

AUSTRALIA.—QUEENSLAND—continued.

Wolfram.—The State now ranks as one of the principal sources of the world's supply of Wolfram. The bulk of the ore obtained in 1904 came from the Herberton and Hodgkinson districts.

TABLE 298.  
PERSONS EMPLOYED at MINES during the Years 1903 and 1904.\*

Kind of Mines.					1903.	1904.
Coal	...	...	...	...	1,329	1,336
Gold	{ alluvial	...	...	...	1,951†	2,002‡
	{ vein	...	...	...	7,278	7,618
Other mines	...	...	...	...	3,980	4,442
Total	...	...	...	...	14,538	15,398

TABLE 299.  
QUANTITY and VALUE of MINERALS produced during the Years 1903 and 1904.§

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Bismuth ore	11	11	2,523	20	20	3,581
Bismuth, Wolfram, and Molybdenite.	24	24	2,100	22	22	2,746
Coal	507,801	515,950	164,798	512,015	520,232	166,536
Copper	4,916	4,995	285,122	4,370	4,440	257,896
Gems, other than Opal	—	—	7,000	—	—	10,575
Gold (fine)	ozs. 668,546	kilos. 20,794	2,839,810	ozs. 639,151	kilos. 19,880	2,714,934
Iron ore ¶	9,808	9,965	3,852	4,424	4,495	1,659
Lead	3,795	3,850	43,639	2,046	2,079	24,560
Manganese ore	1,320	1,341	5,332	830	843	3,540
Opal	—	—	7,300	—	—	3,550
Scheelite	—	—	—	1	1	75
Silver	ozs. 642,125	kilos. 19,972	65,538	ozs. 654,929	kilos. 20,370	71,858
Stone** :—						
Bluestone	50,662	51,475	7,133	20,509	20,838	4,263
Granite	4,271	4,340	905	350	356	750
Limestone	15,650	15,901	1,985	12,561	12,703	3,063
Porphyry	29,204	29,673	1,383	35,216	35,781	1,394
Sandstone	6,280	6,381	2,931	3,054	3,103	827
Volcanic Ash	39,609	40,245	3,136	Not stated.	—	Not stated.
Other	5,285	5,370	1,001	31,202	31,703	1,985
Tin ore (dressed)	3,708	3,765	243,149	3,923	3,986	270,276
Wolfram	197	200	7,870	1,539	1,564	161,635
Total value	—	—	3,696,507	—	—	3,705,703

\* Annual Report of the Under Secretary for Mines for the year 1904, Brisbane, 1905, p. 21  
† Including 494 Chinese.  
‡ 521  
§ Op. cit., pp. 15, 17, 19 and 20.  
|| The quantities of crude gold were 921,363 ozs. in 1903 and 877,238 ozs. in 1904.  
¶ Used principally for fluxing purposes.  
\*\* Statistics of Queensland for 1904, Brisbane, 1905.

AUSTRALIA.—SOUTH AUSTRALIA—continued.

TABLE 301.

PERSONS EMPLOYED at MINES AND QUARRIES during the Years 1903 and 1904.

		Average Number of Persons Employed in and about the Mines during the years	
		1903.	1904.
South Australia proper	... ..	6,000§	6,050§
Northern Territory...	... ..	1,283	1,347
Total	... ..	7,283	7,397

It is estimated that of the above persons about 4,000 were employed at copper mines, 1,000 at gold mines, 50 at silver-lead, 400 at salt, and 600 at workings for other minerals in 1904.

TABLE 302.

QUANTITY and VALUE of MINERALS produced during the Years 1903 and 1904.

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Copper ... .. (exported)	6,490	6,594	417,037	6,564*	6,689	406,506
Copper ore ... ..	7,072*	7,185	54,977	3,111*	3,161	25,557
Gold (fine)† ... ..	ozs. 21,195*	kilos. 659	90,031	ozs. 29,108*	kilos. 905	123,648
Gold ore and concentrates ...	22*	22	154	—	—	—
Iron ore for fluxing ... ..	—	—	—	46,687	47,436	27,091
Lead ... .. (exported)	720	732	8,799	—	—	—
Limestone for fluxing ... ..	—	—	—	43,440	44,137	26,059
Manganese ore ... ..	10	10	19	—	—	—
Molybdenite ... ..	—	—	—	2	2	198
Salt ... ..	40,000‡	40,642	50,000‡	40,000‡	40,642	50,000‡
Silver ... .. (exported)	ozs. 7,086	kilos. 220	804	—	—	—
Silver lead ore... ..	211	214	1,267	167*	170	1,387
Tin ore ... ..	171*	174	10,772	366*	374	27,085
Wolfram ... ..	—	—	—	28*	28	2,724
Unenumerated ore ... ..	—	—	81	—	—	—
Total value ... ..	—	—	633,941	—	—	690,255

Five fatal accidents are reported to have occurred in South Australia proper, and two fatal accidents in the Northern Territory, in 1904. The total death-rate per 1,000 persons employed was .95.

In 1904 an Act (No. 858) was passed entitled "The Mining Act Amendment Act, 1904," by which the provisions of Part IV. of the Mining Act, 1893, were extended to every stone or flux quarry on private or Crown lands, such quarries for the purposes of that part of the Act to be deemed to be Mines and the work done therein to be Mining.

§ Approximate.  
\* Including output of Northern Territory.  
† The quantities of crude gold were 27,829 ozs. in 1903 and 34,079 ozs. in 1904.  
‡ Estimated.



AUSTRALIA—TASMANIA—continued.

TABLE 304—continued.

Description of Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons. ozs. 59,891	Metric Tons. kilos. 1,863	£ 254,408	Statute Tons. ozs. 65,921	Metric Tons. kilos. 2,050	£ 280,015
Gold (Fine) ... ..	5,980	6,076	2,905	6,840	6,950	2,975
Iron ore ... ..	42,422	43,103	192,492	51,139	51,959	203,702
Silver lead ore ... ..	2,376	2,414	300,098	2,071	2,104	255,228
Tin (exported) ... ..	—	—	—	245	249	10,893
Tin ore (exported) ... ..	—	—	—	15	15	1,147
Wolfram ... ..	—	—	—	1,931	1,962	1,982
Zinc ore ... ..	—	—	—	—	—	1,411,192
Total value ... ..	—	—	1,354,044	—	—	1,411,192

TABLE 305.

DEATHS from ACCIDENTS at MINES during the Years ended 31st December 1903 and 1904.

	1903.		1904.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
	14	2.33	9	1.45

VICTORIA.\*

Coal.—Victoria possesses large deposits of brown coal of Tertiary age. Up to the present time they have been little utilised. The output for 1904 was 121,741 tons. This quantity is much below that for the period anterior to the strike, which lasted the greater part of the year 1903.

Gold.—The State with a yield of 765,600 ozs. of fine gold in 1904, stands second in the Commonwealth as a gold producer. It is true that the weight of its bar gold was less than that of Queensland; but much of the gold from the latter colony has a comparatively low standard of fineness, so that when its output is reduced to fine gold it falls behind Victoria. On the 31st December, 1904, the New Chum Railway Mine situated on the Bendigo goldfield, was 3,896 feet deep, and there were 10 other mines over 3,000 feet in depth.

Tin Ore.—The bulk of the output of tin in 1904 was obtained by dredging and hydraulic sluicing by gravitation.

TABLE 306.

PERSONS EMPLOYED at MINES during the Years 1903 and 1904.

	—	1903.	1904.
		377	589
Coal ... ..		25,208	24,331
Gold ... ..		84	87
Other Mines ... ..		25,669	25,007
Total ... ..			

\* Annual Reports of the Secretary for Mines for Victoria for 1903 and 1904, Melbourne 1904 and 1905.

AUSTRALIA—TASMANIA—continued.  
TABLE 304—continued.

Description of Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons. oss. 59,891	Metric Tons. kilos. 1,803	£	Statute Tons. oss. 65,921	Metric Tons. kilos. 2,050	£
Gold (Fine) ... ..			254,408			280,015
Iron ore ... ..	5,980	6,076	2,905	6,840	6,950	2,975
Silver lead ore ... ..	42,422	43,103	192,492	51,139	51,950	203,702
Tin (exported) ... ..	2,376	2,414	300,098	2,071	2,104	255,228
Tin ore (exported) ... ..	—	—	—	245	249	10,893
Wolfram ... ..	—	—	—	15	15	1,147
Zinc ore ... ..	—	—	—	1,931	1,962	1,982
Total value ... ..	—	—	1,354,044	—	—	1,411,192

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and 1904.

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	14	2·33	9	1·45

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\* Annual Reports of the Secretary for Mines for Victoria for 1903 and 1904, Melbourne 1904 and 1905.

AUSTRALIA.—VICTORIA—*continued.*

TABLE 307.

QUANTITY and VALUE of the MINERALS produced during the Years 1903 and 1904.

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons. 5	Metric Tons. 5	£ 50	Statute Tons. 20	Metric Tons. 20	£ 160
Antimony ore ... ..	—	—	—	—	—	—
Brown coal ... ..	5,661	5,752	2,827	—	—	—
Clays ... ..	—	—	14,500	—	—	*
Coal ... ..	64,200	65,230	40,818	121,741	123,895	70,208
Copper ore ... ..	25	25	500	—	—	—
Gold (fine)† ... ..	ozs. 767,351	kilos. 23,867	3,259,483	ozs. 765,600	kilos. 23,815	3,252,045
Gypsum ... ..	3,590	3,648	897	3,620	3,678	1,905
Infusorial earth ... ..	400	406	2,400	—	—	—
Salt (crude) ... ..	—	—	—	2,737	2,781	2,053
Silver (fine) ... ..	ozs. 28,800	kilos. 896	2,880	ozs. 28,653	kilos. 891	3,390
Tin ore ... ..	33	34	2,165	71	72	5,190
Building stone (Basalt, Lime-stone, Sandstone, Granite, &c.).	—	—	42,649	—	—	83,585
Other building materials, &c., Bricks, Pottery, Drain-pipes, Tiles, &c.	—	—	—	—	—	214,030
Total value ... ..	—	—	3,369,169	—	—	3,632,566

TABLE 308.

DEATHS from ACCIDENTS at MINES during the Years 1903 and 1904.

Kind of Mines.	1903.		1904.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal ... ..	1	2·65	2	3·40
Gold ... ..	21	·83	17	·70
Total ... ..	22	·86	19	·76

An Amending Mines Act (No. 1961) was passed in the year 1904 dealing with a variety of matters relating to mines, such as leases, mining boards, ventilation, dust and fumes, sanitary provisions, wages, plans, mine managers' certificates, engine drivers' certificates, rules, etc.

Amongst the amendments in the General Rules (section 45) may be noticed the following provisions :—

Rule 1 prescribes that the standard of ventilation shall be a minimum of 70 cubic feet of air per minute for each man and boy (except in the case of coal mines when it must be not less than 100 cubic feet) and 150 cubic feet for each horse employed underground at mines. Where, however, noxious gases exist to a dangerous degree, such greater quantity of air as may be ordered in each case by the Minister up to a maximum of 500 cubic feet must be provided.

Rule 2 states that sprays are to be used when the work of boring or drilling holes by machinery is carried on underground.

\* The only figure available.  
† The quantities of

or manufactured goods are value for Bricks, &c.  
822,424 ozs. in 1903 and 821,017 ozs. in 1904.



## AUSTRALIA.—VICTORIA—continued.

Rule 3 states that sprays are to be used or other effective means employed in cases where a nuisance is caused by dust or fumes mingling with the air in the workings to such an extent as in the opinion of the Mines Inspector is detrimental to the health of the miners.

Rule 4 (a) makes it compulsory for detonators to be kept in a separate magazine.

Rule 27 states that every cage in a mine must be fitted with suitable appliances to prevent its sudden fall down a shaft.

Rule 48 compels proper sanitary accommodation and Rule 49 an adequate supply of pure drinking water to be provided at the mines.

## WESTERN AUSTRALIA.\*

A map of the State, prepared by Mr. Maitland, the Government Geologist, and pre-facing the Report of the Department of Mines, shows by coloured signs the distribution of the various useful minerals which have been discovered, viz.:—Aluminium, antimony, asbestos, bismuth, coal, cobalt, copper, diamonds, diatom earth, gold, graphite, guano, iron, lead, manganese, mica, silver, and tin.

*Coal.*—The output of the only coalfield, that at Collie, was 138,550 tons in 1904, an increase of 5,123 tons compared with 1903.

*Copper Ore.*—The quantity produced during the year 1904 was only 3,969 tons, or 16,557 tons less than the preceding year. The decrease was entirely owing to one of the mines in the Mount Malcolm District being for a time practically closed down. The Phillips River Goldfield, however, recorded an increased output of 1,907 tons for the year. It is anticipated that the production of the State for 1905 will show an improvement, as a government smelter which was erected early in the year started operations in October.

*Gold.*—The output of gold has decreased by about 4 per cent. The average yield for the whole State per ton of ore milled was 1·07 ozs. as against 1·10 ozs. for the previous year. Nearly 55 per cent. of the gold was produced by the East Coolgardie Field, with a total output of 1,139,597 ozs.; next in importance comes the Murchison Field with 217,916 ozs., followed by the Mount Margaret Field with an output of 183,071 ozs. The North Coolgardie Goldfields produced 141,133 ozs.

The number of gold-producing mines in the State in 1904 was 1,228.

*Tin Ore.*—The output for the year shows an increase of 38 tons, and the value an increase of £2,927 on the figures for 1903. The two producing districts are Greenbushes and Pilbarra.

TABLE 309.

PERSONS EMPLOYED at MINES, ALLUVIAL GOLD, and STREAM TIN WORKINGS during the Years 1903 and 1904.

Kind of Mines.	1903.			1904.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	308	94	402	283	75	358
Copper Ore ... ..	98	95	193	80	89	169
Gold { Vein ... ..	9,349	7,980	17,329	8,922	7,926	16,848
	—	3,387	3,387	—	1,956	1,956
Limestone ... ..	—	1	1	—	—	—
Tin ... ..	60	234†	294	52	232†	284
Total ... ..	9,815	11,791	21,606	9,337	10,278	19,615

\* Reports of the Department of Mines of Western Australia for the Years 1903 and 1904. Perth, 1904 and 1905.

† As the tin obtained is principally "stream tin" the average number of alluvial workers is included under the heading Above-ground.



AUSTRALIA.—WESTERN AUSTRALIA—*continued.*

TABLE 310.

QUANTITY and VALUE of the MINERALS produced during the Years 1903 and 1904.

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons. 22	Metric Tons. 22	£	Statute Tons.	Metric Tons.	£
Antimony (exported) ...	—	—	230	—	—	—
Asbestos ...	cwt. 4	kilos. 203	10	—	—	—
Coal ...	133,427	135,568	69,128	138,550	140,773	67,174
Copper ore ...	20,526	20,855	56,541	3,969	4,033	25,180
Gold (fine)* ...	ozs. 2,064,801	kilos. 94,223	8,770,719	ozs. 1,983,230	kilos. 91,085	8,424,226
Ironstone for fluxing ...	220	224	88	1,442	1,465	577
Limestone ...	1,280	1,301	178	13,397	13,612	1,699
Plumbago ore (exported) ...	—	—	—	cwt. 1	kilos. 51	2
Salt (exported) ...	54	55	87	†	—	†
Silver (fine), (exported) ...	ozs. 168,113	kilos. 5,229	19,153	ozs. 399,190	kilos. 12,416	45,912
Tin ore (dressed) ...	817	830	55,890	855	869	58,817
Total value ...	—	—	8,972,024	—	—	8,623,587

TABLE 311.

DEATHS from ACCIDENTS at MINES during the Years 1903 and 1904.

Kind of Mines.	1903.						1904.					
	Number of Persons Killed.			Death-rate per 1,000 Persons Employed.			Number of Persons Killed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ...	1	—	1	3.25	—	2.49	—	—	—	—	—	—
Gold ...	34	7	41	3.64	.88†	2.37‡	37	4	41	4.15	.50†	2.43‡
Other mines ...	1	—	1	6.33	—	2.05	1	—	1	7.58	—	2.21
Total for all mines	36	7	43	3.77	.83†	2.36‡	38	4	42	4.07	.48†	2.38‡

Although the number of persons employed has decreased by 1,991, the death-rate has slightly increased. This increase is accounted for by a serious shaft accident in the Great Boulder Mine in which 5 men were killed.

A consolidating Act has been passed, entitled The Mining Act, 1904,§ which came into force on the 1st March, 1904. It embodies the Goldfields Act, the Mineral Lands Act, and the Mining on Private Property Act. One of its principal provisions provides for private property being thrown open to mining for minerals other than gold after certain conditions have been complied with.

On the 20th April, 1904, a Royal Commission was appointed to inquire into and report as to the condition of ventilation and sanitation of the mines in Western Australia.

\* The quantities of crude gold were 2,436,311 ozs. in 1903, and 2,373,021 ozs. in 1904.

† Information not received.

‡ Exclusive of alluvial gold workers.

§ *Western Australia. Report of the Department of Mines for the year 1903.* Perth, 1904, p. 35.



AUSTRALIA.—WESTERN AUSTRALIA—*continued.*

The Report of the Commissioners which was issued on the 25th February, 1905, suggests\* the Amendment of the Mines Regulation Act, 1895, so as to provide for :

(1.) The appointment of a Mines Regulation Board for the purpose of advising as to the desirability of repealing, amending, or issuing regulations under the Act ; arranging for and conducting experiments and investigations in order to decide questions relating to the ventilation and sanitation of mines and the safety of persons employed therein ; entering into and examining mines, summoning witnesses and taking evidence on oath for these purposes, and exercising any special powers which the Governor in Council may confer upon it.

(2.) The appointment of " check " inspectors by the Association of Miners, subject to the approval of the Minister for Mines.

(3.) Powers being given to the Governor-General to make regulations for mines in connection with—

- (a.) Ventilation.
- (b.) Prevention and laying of dust.
- (c.) Use of explosives.
- (d.) The connection of workings for ventilating purposes.
- (e.) Sanitary condition of mines.

West Indies. (*See* BARBADOS, DOMINICA, REDONDA and TRINIDAD.)

Bahamas.†

There are no mines in the Colony ; but quarries are worked for soft limestone which is used locally and also exported.

Bay salt is produced in the Bahamas by the solar evaporation of sea water. The principal producers are Inagua, Rum Cay, and Ragged Island. During the year 1904 the number of persons employed temporarily was about 203.

The output during the last two years was as follows :—

TABLE 312.

Year.	Quantity.		Value.	
	Statute Tons.	Metric Tons.	£	
1903	1,377	1,400	602	
1904	1,570	1,595	749	

Barbados.‡

The most important mineral product of the island is "manjak," a variety of glance pitch occurring in veins which traverse deposits of infusorial earth. About 226 men and boys and 7 women are employed at the mines where it is worked. The quantity exported in 1903 was 650 tons, valued at £6,508 and in 1904, 500 tons valued at £5,012. The greater portion of the supply is sent to the United States.

There are several wells yielding petroleum, and several quarries from which good building stone is obtained.

\* Perth, 1905 pp. 51-58.

† Governor Grey-Wilson, "Bahamas Report for 1904-5," *Colonial Reports—Annual* No. 471, London, 1905 [Cd. 2684-17] p. 12, and Official Return furnished by the Colonial Secretary, Nassau.

‡ Hodgson, "Barbados. Report for 1903" and Knaggs, "Barbados. Report for 1904-5," *Colonial Reports—Annual* No. 432, London, 1904 [Cd. 2238-9], p. 8 and 11 and No. 466, London, 1905 [Cd. 2684-12], p. 8 and *Blue Book for Barbados for 1904-5.*



**Basutoland.\***

No mining of any sort is carried on at present in Basutoland. Coal crops out in several places and was worked for a short time for local purposes, but as soon as mining difficulties arose the work ceased. There are indications in the Colony of iron, copper, and tin.

**Bechuanaland Protectorate.†**

Little is known about the mineral wealth of this country; though a small seam of good coal has been discovered close to the railway in the Northern Protectorate. Gold is found in the Tati district and work has been resumed at two or three of the mines there.

**British Borneo.****LABUAN.‡**

The Labuan Coalfields Company, Ltd., which purchased the Labuan Coalfields at the end of the year 1902, are now engaged in extensively developing a seam nine feet thick at Coal Point.

During the last three or four years all the coal produced has been sold at Victoria Harbour, Labuan, for steamships calling there for bunker supplies. The average selling price of the coal during the years 1903 and 1904 was 17s. 0d. per ton.

Between 400 and 500 Chinese, Malays, and Klings are employed in the mines at Coal Point, and from 50 to 60 in coaling operations at Victoria.

The quantities of coal produced in 1903 and 1904 were as follows:—

TABLE 313.

Year.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£
1903	18,844	19,146	16,017
1904	12,460	12,660	10,591

**NORTH BORNEO.§**

The existence of coal, copper, iron, manganese, gold, and other minerals has been proved; gold has from time immemorial been worked by the natives in the vicinity of Darvel Bay. Coal has been discovered in Marudu Bay, and the coalfield in the vicinity of Cowie Harbour has been proved to contain two workable seams. One of them, which is six feet six inches thick, has been traced along its outcrop for a distance of six miles, and mining operations have been commenced in the Tawao district.

A very large deposit of iron ore has recently been discovered within 20–25 miles of the manganese deposits in Marudu Bay.

Manganese ore was discovered in Marudu Bay in 1903, and it is expected that the first shipment of ore will take place early in 1905.

\* Sir Godfrey Lagden, *Jour. R. Col. Inst.*, Vol. xxxii., 1901, p. 462, and information furnished by the Government Secretary, Maseru.

† Lord Selborne "Bechuanaland Protectorate Report for 1904–1905." Colonial Reports—Annual, No. 479,—London, 1905, p. 6.

‡ Information furnished by the Labuan Coalfields Company, Ltd.

§ Information furnished by the British North Borneo Company, and The Singapore and Straits Directory for 1905, Singapore, 1905, p. 372.



BRITISH BORNEO—*continued.*

SARAWAK.

The known mineral resources of Sarawak are deposits of antimony ore, coal, diamonds, gold, and petroleum.

*Antimony.*—The Borneo Company has antimony works at Busoh in Upper Sarawak, but work has been stopped owing to failure in finding fresh deposits.

*Coal.*—The Government works two coal mines, one at Sadong, which produced 15,547 tons in 1903 and 15,767 tons in 1904, and the other at Brooketon, which produced 15,411 tons in 1903 and 29,213 tons in 1904.

*Diamonds.*—The gems are found in very small quantities.

*Gold.*—The Borneo Company, Ltd., is successfully extracting large quantities of gold by the cyanide process from auriferous quartz, gravel and clay containing only about 5 dwts. per ton. The output of fine gold in 1904 was 42,745 ozs. as against 41,000† ozs. in the previous year.

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British Central Africa Protectorate.‡

From the discoveries which have been made of coal, copper, gold, iron, lead, silver, &c., the Protectorate appears to be rich in mineral deposits, but very little prospecting has been done during the year ended 31st March, 1905.

The coal is stated to be similar in character to the Gondwana coal of India. Specimens from Deep Bay, in the Karonga district, are reported as non-caking and of fair quality. It is estimated that in the West Shiré district the coalfields are 3,000 square miles in extent.

Copper ore exists in the Ruo, Lower Shiré, and Shiré Highlands districts.

There are deposits of auriferous quartz in the Shiré Highlands, but at present none of these have been proved to contain more than 5 dwts. of gold per ton.

A lode of argentiferous galena has been found in Angoniland, which is stated to contain 81 per cent. of lead and 26 ozs. of silver per ton of ore.

Some samples of mineral ore from near Blantyre are reported to contain nickel similar to that at Sudbury, Ontario, Canada.

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British Columbia. (See under CANADA.)

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British East Africa Protectorate.§

The mineral resources of the Protectorate have not yet been fully ascertained, but iron is known to occur abundantly in most districts, mica and graphite are to be found in Ukamba, limestone is worked near Kitui, Makindu, and Lake Victoria, opals are plentiful in the Rift Valley, a large deposit of carbonate of soda has been discovered in the southern part of Ukamba, and gold mining has been commenced, but discontinued.

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\* Consul Hewett, "Trade and Commerce of Sarawak for the Year 1902."—*Dipl. and Cons. Reports*, No. 3,096, Ann. Ser. 1903 [Cd. 1,766-30], and information furnished by the Borneo Company, Ltd.

† Corrected figures.

‡ Commissioner Sharpe, "Trade and General Condition of British Central Africa Protectorate for the Year 1903-1904."—[Cd. 2242], 1904, pp. 17 and 18; and Acting Commissioner Wallis, "Report for 1904-5" [Cd. 2,684-18] 1905, p. 33.

§ F. J. Jackson, "British East Africa Protectorate Report for 1904-5," *Colonial Reports—Annual No. 475* [Cd. 2,684-23.] 1905, p. 11.



## British Guiana.\*

*Diamonds.*—No further development of this industry took place during the year 1904-5. 175,400 stones, weighing 10,619 carats and valued at £16,395, were produced; these came from the Mazaruni River, and were obtained by primitive methods of hand washing.

*Gold.*—The production for the year was 95,864 ozs. of alluvial gold, showing an increase of 5,528 ozs. on that of the previous year.

The hydraulic plant at Omai on the Essequibo River continued operations throughout the year and produced 12,683 ozs. of gold (bullion), as against 4,567 ozs. during the previous year.

The gold dredger erected during last year at Gilt Creek, Omai, continued work and obtained good returns.

Development work was continued on the Barima Mine, Arakaka Creek, in 1904.

The Puruni River attracted the most attention in gold-mining circles during the year. A 15-stamp mill has been erected at Peter's Mine on the right bank of the river, and the result of the first crushing is awaited with interest.

TABLE 314.

PERSONS EMPLOYED at MINES, ALLUVIAL WORKINGS, and QUARRIES during the Years 1903-1904 and 1904-1905.

Kind of Workings.	1903-1904.	1904-1905.
Mines and Alluvial or Placer Diggings ...	12,003 (a)	11,214 (a)
Granite Quarries ... ..	22	27

(a) Approximate figures, and relate to the number of men registered.

TABLE 315.

QUANTITY and VALUE of the MINERALS produced in 1903-1904 and 1904-1905.

Mineral.	Financial Year 1903-1904.			Financial Year 1904-1905.		
	Quantity.		Value.	Quantity.		Value.
<i>Diamonds</i> ... ..	Carats. 10,742	—	£ 21,484	Carats. 10,619	—	£ 16,395
<i>Gold</i> ... ..	Ozs. 90,336	Kilos. 2,810	329,350	Ozs. 95,864	Kilos. 2,982	349,504
<i>Granite</i> ... ..	Statute Tons. 2,754	Metric Tons. 2,798	1,721	Statute Tons. 3,397	Metric Tons. 3,452	2,123
Total value ... ..	—	—	352,555	—	—	368,022

Official Return furnished by the Department of Lands and Mines, Georgetown: *British Guiana, Report of the Commissioner of Mines for the year 1904-1905*. George Town Demerara, 1905; and Hodgson, "British Guiana Report for 1904-5," *Colonial Reports*—Annual No. 477,—London, 1905.



BRITISH GUIANA—continued.

The table below shows the output of the principal districts :—

TABLE 316.  
Gold obtained.

District.					Financial Year 1903-1904.	Financial Year 1904-1905.
					Ozs.	Ozs.
Barima	...	...	...	...	22,279	19,970
Barama	...	...	...	...	7,663	6,542
Cuyuni	...	...	...	...	16,867	16,584
Demerara	...	...	...	...	244	814
Essequebo	...	...	...	...	12,380	21,343
Groote Creek	...	...	...	...	1,153	355
Mazaruni	...	...	...	...	2,297	1,795
Potaro	...	...	...	...	18,542	21,177
Puruni	...	...	...	...	8,911	6,684
Total output in ozs.					90,336	95,864
" " kil.					2,810	2,982

TABLE 317.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1903-1904  
and 1904-1905.

Kind of Workings.	1903-1904.		1904-1905.	
	Persons Killed.	Death-rate per 1,000 Persons employed.	Persons Killed.	Death-rate per 1,000 Persons employed.
Gold mines ... ..	4	.33	1	.09
Alluvial or Placer diggings ...				
Granite quarries ... ..	—	—	—	—

British New Guinea.\*

There are several goldfields in the Possession, viz., Louisiade, Sudest and Misim Islands, Gira, Yodda, Murua or Woodlark Island, Milne Bay, Cloudy Bay, and Mus River, which give employment to between 250 and 300 persons. The output of gold for the year ended 30th June, 1904, judging by the Customs returns of the quantities exported, which do not show a complete record of all the gold that leaves the Possession, shows a considerable increase on that of the preceding year.

A small quantity of mica valued at £10 was exported from Samarai during the year 1902-1903.

\* Annual Report on British New Guinea for 1903-1904.

BRITISH NEW GUINEA—*continued*.

TABLE 318.

	Year.	Gold exported.		Value.
		Ozs.	Kil.	£
	1902-1903	11,537	359	40,323
	1903-1904	14,976(a)	466	52,083

(a) In addition 154 tons of gold ore and concentrates valued at £3,603 were exported.

## British Solomon Islands.\*

Copper ore is known to exist in the Island of Rendova, and a concession for a period of two years was granted in 1902 for the purpose of working sulphur in the Island of Vella Lavella.

## Canada.†

*Asbestos*.—The Canadian asbestos, which mineralogically is chrysotile, occurs in considerable quantities in the form of small veins in intrusive serpentine, in the Eastern Townships of the province of Quebec, and at various points north of Ottawa in association with serpentinous rocks in the Laurentian formation. The whole of the quantity obtained in 1904 came from Quebec.

*Chromic Iron Ore*.—This ore is obtained from irregular pockets in the intrusive serpentines of the Eastern Townships of the province of Quebec.

*Coal*.—The coalfields, which have been most largely developed, are situated on the seaboard of the Atlantic and Pacific Oceans, and are therefore of no small importance from an Imperial point of view. On the Atlantic side of the continent, bituminous coal is being mined from thick seams of true Carboniferous age at the Sydney (Cape Breton), Pictou, and Springhill coalfields, in Nova Scotia. New Brunswick has a small area of thin seams of bituminous coal. The coal of the Pacific coast, generally bituminous, is of Cretaceous age, and is derived from collieries at Nanaimo, Wellington, and Comox, in Vancouver Island. Anthracite and bituminous coal occur in Queen Charlotte Islands.

In the interior of the Dominion no coal is found between the Atlantic seaboard and the prairies of the West, where great quantities of lignite exist. At Lethbridge the seams are worked on a large scale. On approaching the Rocky Mountains, the seams occurring near Cochrane improve in quality, and yield bituminous coal. Further west again is the Cascade coalfield, in the vicinity of Banff, one of the well-known pleasure resorts of the Rocky Mountains, where the coal has become converted into semi-anthracite and anthracite.

Thick seams of good bituminous coal and semi-anthracite have long been known to exist in the vicinity of the Crow's Nest Pass, and this store of valuable fuel is now being worked on a large scale. All these coals are of Cretaceous age.

In 1904 the output of coal (including the quantity converted into coke) in the Dominion exceeded  $7\frac{1}{2}$  million tons, of which Nova Scotia produced about 74 per cent., British Columbia 24 per cent., and the North-West Territories, together with New Brunswick, 2 per cent.

\* Woodford, "British Solomon Islands Annual Report for 1901-1902." *Colonial Reports*, Annual, No. 372 [Cd. 788-42]. London, 1902, p. 16.

† Reports of the Division of Mineral Statistics and Mines of Canada for the years 1903 and 1904. Ottawa.



## CANADA—continued.

*Cobalt.*—Deposits of cobalt, nickel, and arsenic ores have been found during the building of the Timiskaming and Northern Ontario Railway, which promise to add largely to the production of these metals in the near future.

*Copper.*—Copper ore is mined in the provinces of British Columbia, Ontario, and Quebec, the first-named being by far the most important. Its output has increased very largely during the past three years owing to the yield of the mines in the Kettle River, Grand Forks, and Osoyoos Mining Divisions, which lie upon the border of the United States. This "Boundary" district, as it is called, produced more than 60 per cent. of the total output of the province.

In Ontario copper pyrites accompanies the nickeliferous pyrrhotite, which has made the Sudbury district so famous; during 1904 about 9,066 tons of high grade matte containing 2,192 tons of copper were shipped from that district. Large quantities of regulus containing copper and nickel are produced at the Sudbury smelting works and sent to the United States and Great Britain for the extraction of the two metals.

In the province of Quebec there are veins of cupreous iron pyrites containing a little silver, and they furnish an ore which is utilised in the manufacture of sulphuric acid before the valuable metals are extracted.

*Corundum.*—In the year 1897 large deposits of corundum were discovered near Raglan, in the counties of Peterborough, Hastings, and Renfrew, in Eastern Ontario; the mineral is now being worked on a large scale for the purpose of making corundum wheels, and Canada is becoming one of the greatest corundum-producing countries in the world.

*Gold.*—Nearly every province in Canada shows a falling off in the gold production in 1904 as compared with 1903. At the present time the chief gold-producing provinces of the Dominion are the Yukon region of the North-West Territories, British Columbia, Nova Scotia, and Ontario.

The Yukon region, with the great Klondike goldfield, produced about 63 per cent of Canada's output; but the yield of 500,097 ozs. shows a falling off of 15.6 per cent. compared with that of the previous year.

Next in importance is British Columbia, with a yield of 277,807 ozs. of gold in 1904, of which 55,765 ozs. were obtained from alluvial deposits and 222,042 ozs. from lodes. The most important alluvial or placer district at the present time as regards output is Cassiar. Arrangements are being made to work placer gold in the Atlin Division with steam shovels. Most of the lode gold is extracted by smelting auriferous copper ores in the Rossland, Nelson, and "Boundary" districts, and some by amalgamation and concentration. Gold dredging has not as yet proved a commercial success.

The gold of Nova Scotia is derived from free-milling quartz veins.

In Ontario, although a considerable amount of prospecting and development work has been done, most of the mines, which formerly were important producers, were not working during 1904. The existence of auriferous veins has been proved over a considerable extent of country from the extreme west of the province in the vicinity of the Lake of the Woods, through Rainy Lake, Seine River, Manitou Lake, Wahnapiet Lake, to the Marmora district in the east.

*Granite and Miscellaneous Building Stones.*—Building stones, such as granite, limestones, marble, and sandstone abound in the Dominion, and it is only the lack of a sufficient market which prevents their being worked on a larger scale.

*Graphite.*—This mineral is obtained in the provinces of New Brunswick, Ontario, and Quebec from crystalline limestone in the Laurentian rocks. Most of the graphite raised in 1904 came from mines in the province of Ontario, only a small portion being obtained from Quebec.

*Gypsum.*—New Brunswick and Nova Scotia are remarkable for thick beds of gypsum, some of which occurs in the form of spotlessly white alabaster. A small amount of gypsum is being mined in Ontario.

*Iron Ore.*—Numerous iron ore deposits are known in Nova Scotia, but the output is at present small in comparison with the quantity which is imported from Newfoundland. In Quebec the furnaces use bog ore produced in the province in admixture with ores



## CANADA—continued.

brought from outside. In Ontario iron ore is obtained on a large scale from Helen Mine at Michipicoten on Lake Superior, and prospecting work is being carried on actively in many iron ore districts discovered during the last few years throughout the northern part of the province, known as New Ontario.

*Lead Ore.*—The lead mining of Canada is practically confined to the province of British Columbia, especially in the East and West Kootenay districts. A small quantity is obtained from Ontario.

*Mercury.*—A little cinnabar was obtained a few years ago from mines near Kamloops Lake, in British Columbia, but none appears to have been raised since 1897.

*Mica.*—This mineral is mined quite extensively in various places. The phlogopite and biotite varieties are obtained in the provinces of Ontario and Quebec, in the district about Ottawa, whilst transparent muscovite of excellent quality is found at Tête Jaune Cache, in British Columbia.

*Natural Gas.*—In Essex and Welland counties in the peninsula of Ontario, natural gas has been obtained by boring down to the Lower Silurian rocks. The increased production in 1904 is chiefly due to operations in the latter county, the output of Essex county having fallen to a very small amount.

The development of the Medicine Hat gas field in the North West Territories was carried on successfully during the year. Two of the wells have been bored to a depth of nearly 1,000 feet.

*Nickel.*—Canada can boast that it possesses rich and important deposits of nickel in the Sudbury district, where the metal occurs in pyrrhotite, more or less mixed with copper pyrites. The output in 1904 shows a decrease compared with that of the previous year.

*Ochre.*—The most important ochre deposits are near Three Rivers, Champlain County, Quebec.

*Petroleum.*—Rock oil is produced only in the peninsula of Ontario, where one chief pool and several of less extent have been proved. The crude oil is piped to refineries at Sarnia and Petrolea, Ontario.

*Phosphate of Lime.*—This mineral has been extensively worked from deposits in the Laurentian rocks, especially in the province of Quebec, north of Buckingham, and also to a less extent in the province of Ontario, north of Kingston. Owing to the competition of phosphates from the United States, prices have dropped, and practically none of the Canadian apatite mines are being worked as such. The phosphate appearing in the statistics was obtained as a by-product in mining for mica, or from the old waste heaps of abandoned workings.

*Platinum.*—A small quantity of platinum was formerly produced from placer workings in the Similkameen district of British Columbia. In the form of sperrylite it occurs also in association with the chalcopyrite of the Sudbury nickel deposits. None appears to have been obtained since 1902.

*Salt.*—Thick beds of salt occur in Southern Ontario, in the Onondaga division of the Silurian rocks. The brine is pumped up and evaporated.

*Silver.*—The bounty granted by the Dominion Government on the production of lead ores appears to have stimulated the operations of the silver-lead-mines. The lead ores of British Columbia are often highly argentiferous. In 1904 this province contributed over 80 per cent. of the silver obtained in Canada.

The rich silver ores in the Thunder Bay district of the province of Ontario are not being largely worked at the present time.

*Slate.*—A small amount of slate is obtained from the Cambrian rocks, in the province of Quebec.

*Zinc.*—The zinc is obtained from the county of Frontenac in Ontario. The Slocan district in British Columbia.



## CANADA—continued.

TABLE 319.

QUANTITY and VALUE of MINERALS produced in the DOMINION of CANADA during the Years 1903 and 1904.\*

Mineral or other product.	1903.†			1904.‡		
	Quantity.		Market Value, less Charges of Transport from Place of Production.	Quantity.		Market Value, less Charges of Transport from Place of Production.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Actinolite ...	491	499	639	—	—	—
Arsenic ...	229	233	3,168	65	66	1,418
Asbestic ...	9,418	9,509	2,850	11,617	11,803	2,673
Asbestos ...	27,794	28,240	188,196	31,817	32,328	239,843
Baryta ...	1,038	1,055	808	1,234	1,254	761
Coal ...	6,824,999	6,934,534	3,101,800	6,705,232	6,812,834	2,999,813
Coke ...	501,177	509,220	355,384	485,319	493,107	387,168
Copper (fine, contained in ore).	19,056	19,362	1,160,854	19,183	19,491	1,132,216
Corundum ...	866	880	16,475	821	834	20,761
Felspar ...	12,436	12,636	3,897	9,896	10,055	4,349
Fireclay ...	2,356	2,394	724	Not stated.	—	Not stated.
Flagstones ...	sq. ft. 73,200	sq. met. 6,800	1,374	—	—	1,381
Gold (fine) ...	ozs. 911,639	kil. 28,355	3,871,971	ozs. 793,298§	kil. 24,674	3,369,863
Granite ...	—	—	41,096	—	—	20,548
Graphite ...	650	660	4,879	404	410	2,416
Gravel and Sand ...	317,671	322,769	25,481	356,972	362,701	26,672
Grindstones ...	4,945	5,024	9,925	4,026	4,091	8,791
Gypsum ...	280,794	285,300	79,820	304,251	309,133	76,628
Iron ore ...	137,065	139,265	79,095	150,739	153,158	82,549
" chromic ...	3,133	3,183	10,506	5,423	5,510	13,797
Iron (pig) ...	38,082	38,603	145,446	60,979	61,958	185,318
Lead ...	8,098	8,228	157,924	16,964	17,236	336,456
Limestone for flux in smelting iron ore.	217,725	251,700	51,216	179,148	182,023	36,361
Manganese ore ...	81	82	570	110	112	556
Mica ...	—	—	36,546	—	—	31,268
Mineral water ...	—	—	20,548	—	—	16,488
Natural gas ...	—	—	41,550	—	—	50,829
Nickel ...	5,360	5,446	1,027,850	4,709	4,785	866,949
Ochres ...	5,595	5,685	6,732	3,504	3,500	5,136
Peat ...	982	998	678	—	—	—
Petroleum ...	galls. 17,032,295	litres 77,385,517	215,543	galls. 19,340,125	litres 87,871,046	202,256
Phosphate of lime ...	1,187	1,206	1,688	819	832	943
Pyrites (Copper and Iron).	30,341	30,528	26,242	29,499	29,972	19,479
Salt ...	55,761	56,656	61,134	61,408	62,393	66,472
Sand (moulding) ...	3,266	3,318	1,491	3,056	3,105	1,396
Silver (fine) ...	ozs. 3,198,581	kilos. 90,487	351,296	ozs. 3,718,668	kilos. 115,964	487,231
Slate ...	—	—	4,529	—	—	4,777
Talc ...	884	898	563	750	762	385
Tripolite ...	746	758	3,432	286	291	1,315
Zinc ...	402	408	9,986	213	216	5,005
Building materials:—						
Bricks ...	—	—	—	—	—	—
Building stone ...	—	—	—	—	—	—
Cement, natural ...	—	—	—	—	—	—
" Portland ...	—	—	—	—	—	—
Lime ...	—	—	1,662,537	—	—	1,678,415
Pottery ...	—	—	—	—	—	—
Sewer pipe ...	—	—	—	—	—	—
Terra cotta ...	—	—	—	—	—	—
Tiles ...	—	—	—	—	—	—
Estimated value of mineral products not returned.	—	—	61,644	—	—	61,644
Total value ...	—	—	12,849,087	—	—	12,399,281

The mineral production of Canada on the whole again shows a decrease; the total value of its metallic and non-metallic products were slightly over 12½ millions sterling which is a falling off of 3·5 per cent. compared with the previous year.

In 1904 gold contributed 27·18 per cent. of the total value; coal and coke, 27·3 per cent.; copper, 9·13 per cent.; nickel, 6·99 per cent.; silver, 3·53 per cent.; lead 2·71 per cent.

\* Reports of the Division of Mineral Statistics and Mines of Canada for the years 1903 and 1904. Ottawa.

† Revised figures.

‡ Preliminary Return, subject to revision.

§ Estimated on the value of 1 oz. of gold being worth £4 4s. 11½d.

|| Quantity exported.



## CANADA—continued.

The mining industries of some of the provinces of the Dominion are sufficiently important to deserve separate tables.

## BRITISH COLUMBIA.\*

TABLE 320.

PERSONS EMPLOYED at MINES during the Years 1903 and 1904.

KIND OF MINES.	1903.			1904.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
1 ... ..	3,137	1,127	4,264	3,278	1,175	4,453
al- { Shipping ...	1,531	945	2,476	2,143	1,163	3,306
ous { Non-shipping†	131	143	274	100	59	159
Total ... ..	4,799	2,215	7,014	5,521	2,397	7,918

TABLE 321.

QUANTITY and VALUE of MINERALS produced during the Years 1903 and 1904.

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
... ..	1,168,194	1,186,941	720,120	1,253,628	1,273,746	772,784
... ..	165,543	168,200	170,078	334,102	339,464	244,960
er ... ..	15,339	15,585	934,425	15,942	16,198	940,693
Alluvial... ..	ozs. 53,021	kilos. 1,649	217,895	ozs. 55,765	kilos. 1,734	229,171
from veins, &c. ...	ozs. 232,831	kilos. 7,242	988,894	ozs. 222,042	kilos. 6,906	943,070
1 ... ..	8,076	8,206	141,728	16,360	16,623	292,166
er ... ..	ozs. 2,996,204	kilos. 93,193	312,631	ozs. 3,222,481	kilos. 100,230	353,325
er minerals ... ..	—	—	109,288	—	—	123,288
Total value ... ..	—	—	3,595,059	—	—	3,899,457

TABLE 322.

DEATHS from ACCIDENTS at COAL MINES during the Years 1903 and 1904.

Cause of Accident.	No. of Persons Killed.	
	1903.	1904.
<i>Underground:</i>		
Falls of coal ... ..	4	5
„ rock ... ..	8	4
Explosion or suffocation by gas ...	21	21
Crushed by cars ... ..	5	3
Blasting ... ..	1	1
Struck by posts ... ..	1	—
<i>Surface:</i>		
Railways ... ..	2	—
Miscellaneous ... ..	—	3
Total ... ..	42	37

\* Annual Reports of the Minister of Mines for British Columbia for 1903 and 1904, Victoria.

† The statistics of mines not shipping ores are very incomplete.



CANADA.—BRITISH COLUMBIA—continued.

During the year 1904 there were 14 fatal accidents at metalliferous mines, causing 14 deaths.

TABLE 323.

DEATH-RATE from ACCIDENTS at MINES during the Years 1903 and 1904.

KIND OF MINES.	1903,			1904.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	12.75	1.77	9.85	10.37	2.55	8.31
Metalliferous ...	—	—	7.27*	—	—	4.23*

The death-rate from accidents among coal-miners, although lower than in 1903, is still high. Two serious accidents occurred during the year 1904, which accounted for the high death-rate. One was caused by an explosion of gas at Michel Colliery, by which seven men were killed, and the other by an outburst of gas at Carbonado Colliery which filled one of the levels with coal for a distance of 400 feet and resulted in 14 men being killed.

NOVA SCOTIA.†

TABLE 324.

PERSONS EMPLOYED at COAL MINES during the Years ended 30th September 1903 and 1904.

Year.	Under-ground.			Above-ground.			Construction.			Total.
	Men.	Boys.	Total.	Men.	Boys.	Total.	Men.	Boys.	Total.	
1903 ... ..	7,200	669	7,869	2,547	208	2,755	466	2	468	11,092
1904 ... ..	7,729	717	8,446	2,647	190	2,837	372	4	376	11,659

The number of persons employed at gold mines during the year ending 30th September 1904 was about 429 and at iron mines 184.

\* Calculated on the number of persons employed at mines shipping ore.  
† Reports of the Department of Mines for Nova Scotia for 1903 and 1904, Halifax.

CANADA.—NOVA SCOTIA—continued.

TABLE 325.

QUANTITY of MINERALS produced during the Years ended 30th September 1903 and 1904.

Mineral.	Year ended 30th September 1903.		Year ended 30th September 1904.	
	Quantity.		Quantity.	
	Statute Tons.	Metric Tons.	Statute Tons.	Metric Tons.
Barytes ... ..	801	814	982	998
Coal ... ..	5,245,247	5,329,421	5,247,135	5,331,339
Coke ... ..	350,536	356,161	209,962	213,331
Gold ... ..	ozs. 25,198	kilos. 784	ozs. 14,279	kilos. 444
Grindstones ... ..	650	660	800	813
Gypsum (exported) ... ..	157,009	159,529	161,755	164,351
Iron ore ... ..	36,013	36,591	49,619	50,415
Limestone ... ..	262,544	266,757	191,356	194,427
Sand, moulding ... ..	240	244	175	178

TABLE 326.

DEATHS from ACCIDENTS at MINES during the Years ended 30th September 1903 and 1904.

Year.	Kind of Mines.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
1903 ... {	Coal ... ..	24	2.16
	Gold ... ..	—	—
1904 ... {	Coal ... ..	26	2.23
	Gold ... ..	—	—

ONTARIO.\*

TABLE 327.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1903 and 1904.

Kind of Working.	1903.	1904.
Copper and nickel ... ..	1,437	1,063
Gold and arsenic ... ..	517	230
Iron ore ... ..	324	191
Mica ... ..	164	79
Petroleum ... ..	291	400
Salt ... ..	208	193
Silver ... ..	32	57
Other workings ... ..	7,685	8,278
Total ... ..	10,658	10,491

\* Reports of the Bureau of Mines for Ontario for 1903 and 1904, Toronto.

CANADA.—ONTARIO—continued.

TABLE 328.

QUANTITY and VALUE of MINERALS produced during the Years 1903 and 1904.

Mineral or other Product.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Actinolite ... ..	491	499	339	364	370	21
Arsenic... ..	229	233	3,169	64	65	186
Calcium carbide ... ..	2,238	2,274	29,589	2,092	2,126	31,293
Cobalt ... ..	—	—	—	26	28	7,525
Corundum ... ..	999	1,015	18,000	1,487	1,511	30,954
Copper ... ..	4,760	4,838	147,272	1,931	1,962	61,053
Felspar ... ..	13,658	13,878	4,119	9,806	9,963	4,514
Gold ... ..	ozs. 10,384	kilos. 323	38,638	ozs. 2,285	kilos. 71	8,219
Graphite ... ..	3,929	3,992	4,240	317	322	966
Gypsum ... ..	4,036	4,101	1,625	4,832	4,910	2,193
Iron ore ... ..	185,852	188,835	92,486	47,547	48,310	22,206
Iron pyrites ... ..	6,669	6,778	4,457	12,010	12,203	8,983
Lead ... ..	22	22	308	2,866	2,912	2,260
Lime ... ..	bushels 3,400,000	decalitres 12,358,204	106,849	bushels 2,600,000	decalitres 9,450,392	83,589
Mica ... ..	846	880	21,001	296	301	8,733
Molybdenite ... ..	76	77	262	—	—	—
Natural gas ... ..	—	—	40,384	—	—	52,094
Nickel ... ..	6,248	6,348	513,507	4,235	4,303	311,660
Palladium ... ..	—	—	—	ozs. 952	kilos. 30	3,815
Peat ... ..	982	998	678	714	725	493
Petroleum (orude) ... ..	galls. 16,640,338	litres 75,604,677	326,029	galls. 17,287,220	litres 78,316,585	185,843
Platinum ... ..	—	—	—	ozs. 536	kilos. 17	2,148
Salt ... ..	52,030	52,865	79,746	49,890	50,691	74,511
Silver ... ..	ozs. 16,688	kilos 519	1,839	ozs. 206,875	kilos. 6,435	22,990
Talc ... ..	821	834	539	1,172	1,191	600
Zinc ore ... ..	1,027	1,043	3,493	476	484	760
Building materials :— Bricks,tiles,pipes,&c.	—	—	495,721	—	—	473,672
Building stone, &c.	—	—	178,630	—	—	143,836
Cement, Portland ... ..	barrels 695,260	—	243,041	barrels 880,871	—	254,789
"    rook ... ..	"    99,549	—	14,244	"    85,000	—	13,408
Total value ... ..	—	—	2,365,245	—	—	1,813,314

TABLE 329.

NUMBER of DEATHS from ACCIDENTS at MINES during the Years 1903 and 1904.

Kind of Mine.	Number of Persons Killed.		Death-rate per 1,000 Persons Employed.	
	1903.	1904.	1903.	1904.
Copper ... ..	2	1	1.39	.94
Nickel ... ..	2	6	3.87	26.09
Gold ... ..	3	—	9.26	—
Iron ... ..	—	—	—	—



## CANADA—continued.

## QUEBEC.\*

This Province employed 5,067 persons during the year 1904 in mining and quarrying, of whom 1,775 were engaged in getting asbestos, the most important mineral.

TABLE 330.  
OUTPUT and VALUE of MINERALS during the Years 1903 and 1904.

Mineral.	1903.			1904.		
	Statute Tons.	Metric Tons.	Value.	Statute Tons.	Metric Tons.	Value.
Asbestos .. .. .	26,126	26,545	£ 188,419	31,678	32,186	£ 243,862
Asbestic .. .. .	8,845	8,987	2,731	11,740	11,928	2,697
Barytes ... .. .	393	399	542	—	—	—
Cement ... .. .	barrels 40,000	—	13,562	barrels 33,500	—	10,325
Chrome iron ... ..	2,696	2,739	9,308	5,740	5,832	14,692
Copper ore ... .. .	23,644	24,023	22,577	21,187	21,527	19,521
Felspar ... .. .	18	18	8	—	—	—
Flagstones ... .. .	sq. yds. 3,000	sq. metres 2,508	524	sq. yds. 3,000	sq. metres 2,508	524
Gold ... .. .	ozs. 55	kilos. 2	205	ozs. 20	kilos. 1	37
Granite ... .. .	—	—	32,877	—	—	24,658
Graphite ... .. .	—	—	—	22	22	473
Iron ores ... .. .	10,846	11,020	7,250	14,511	14,744	11,339
Mica ... .. .	129	131	15,230	135	137	17,471
Ochre ... .. .	1,559	1,584	4,200	1,420	1,443	3,868
Phosphate ... .. .	1,060	1,077	1,688	652	662	943
Slate ... .. .	squares 5,510	—	4,529	squares 5,277	—	4,777
Building materials...	—	—	266,096	—	—	266,096
Total value ... ..	—	—	569,746	—	—	621,283

Four deaths resulted from accidents at mines and quarries during the year 1904, which was at the rate of .79 per thousand persons employed.

## Cape Colony.†

Though the diamond industry overshadows all other kinds of mining in the Colony, copper ore has long been a notable article of export.

*Asbestos.*—This mineral occurs in the form of narrow veins, from one to five inches wide, in a dark shale at Westerberg, in the Prieska district, and Koegas, in the Hay district.

*Coal.*—No extensive boring or examination of the country has been made, but outcrops of coal have been discovered at various points along the plateau lying between the Drakensberg range and the Matiwane Mountains, and along the southern slopes of those mountains, between the Kei and Umzimkulu rivers; the seams are mostly thin. Some specimens of coal found in the Cala district are reported to be of good quality and suitable for steam purposes. As shown by Table 332, the total output of coal was 154,272 statute tons in 1904. Of this amount, Indwe produced 95,472 tons; the rest came from collieries at Cyphergat, Sterkstroom, Molteno, &c.

\* Obalski, *Mining Operations in the Province of Quebec for the years 1903 and 1904*, Department of Lands, Mines and Fisheries, Quebec, 1904 and 1905.

† *Statistical Registers for 1903 and 1904, Cape Town, and Reports of the Inspector of Mines for Kimberley, &c., for 1903 and 1904*, Cape Town.



## CAPE COLONY—continued.

*Copper Ore.*—Namaqualand produces all the copper ore ; apparently the copper mines are not under official inspection.

*Crocidolite.*—Small quantities of this mineral, which is used for ornaments and as a jewel, are obtained in the district of Hay and other places.

*Diamonds.*—The gems are obtained mainly from open and underground workings in the solid rock near Kimberley, and to a small extent from alluvial diggings. The three principal mines worked at the present time are De Beers, Kimberley, and Premier (Wesseltion), but much progress has been made in the development of Bultfontein and Dutoitspan Mines. The average yield of diamonds per load of blue ground from the mines, and the value per carat are as follows : De Beers and Kimberly 46 of a carat, value 52s. 10d. ; Wesseltion or Premier Mine 284, value 36s. 11d. ; Bultfontein 41, value 34s. 11d. ; and Dutoitspan 26, value 69s. 11d.\* ; from these figures it will be seen that the diamonds from the last named mine have an exceedingly high value.

In addition to the Kimberley mines, there are a few diamond mines in the Barkly West division, besides alluvial diggings.

*Gold.*—A small quantity of gold is obtained from Millwood in the Knysna division.

*Salt.*—Salt pans are found in 17 divisions of the Colony, the largest being in Cradock (Maraisburg), Ceres, Hope Town, Port Elizabeth, Prieska, Uitenhage, and Malmesbury.

TABLE 331.  
PERSONS EMPLOYED† during the Years 1903 and 1904.

Class of Mine.	Under-ground.			Above-ground.			Total for 1904.			Total for 1903.
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.	
Coal ...	84	1,876	1,960	68	659	727	152	2,535	2,687	2,300
Copper Ore...	—	—	—	—	—	—	301	2,136	2,437	2,221
Diamond (Kimberley)	395	3,179	3,574	2,360	8,228	10,588	2,755	11,407	14,162	12,643‡

TABLE 332.  
QUANTITY and VALUE of MINERALS produced during the Years 1903 and 1904.

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asbestos ... (exported)	272	276	4,357		—	
Coal ...	185,262	188,235	178,851	164,272	156,748	153,503
Copper ore ...	61,555	65,591	309,051§	84,199	85,550	381,756
Crocidolite ... (exported)	12	12	494		—	
Diamonds ...	carats 2,463,691	kilos. 506	4,833,040	carats 2,210,314*	kilos. 454	4,802,844*
Fireclay ...	600	610			—	
Gold ...		—			—	
Salt, white ...	14,874	15,113	49,257§		—	
Total value ...	—	—	5,375,050	—	—	5,338,103

\* De Beers Consolidated Mines, Ltd., "Seventeenth Annual Report for the year ending 30th June, 1905," Kimberley, 1905.

† Exclusive of a few persons employed in getting asbestos and salt.

‡ In addition to these figures 987 persons were employed in 1903 in the mines in the Barkly West division.

§ Value estimated.

|| Not stated.



## CAPE COLONY—continued.

TABLE 333.

DEATHS from ACCIDENTS at COAL and DIAMOND (KIMBERLEY) MINES during the Year 1904.

Class of Mine.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	6	—	6	3·06	—	2·23
Diamond (Kimberley) ...	18	14	32	5·04	1·70	2·26
Total for Coal and Diamond Mines for 1904.	24	14	38	4·34	1·57	2·26
Total for preceding year*	22	7	29	4·50	·70	1·94

In addition to these fatalities six persons were killed in the mines of the Barkly West division during 1903, and the death-rate per 1,000 persons employed was 6·08.

Four out of the six deaths at coal mines in 1904 were caused by falls of roof, one by a coal-cutting machine, and one by an electric shock.

*Kimberley Diamond Mines.†*

TABLE 334.

PERSONS EMPLOYED during the Years 1903 and 1904.

Year.	Under-ground.			Above-ground.			Total.		
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.
1903 ...	367	2,851	3,218	1,914	7,511	9,425	2,281	10,362	12,643
1904 ...	395	3,179	3,574	2,360	8,228	10,588	2,755	11,407	14,162

TABLE 335.

DEATHS from ACCIDENTS during the Years 1903 and 1904.

Year.	Place.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
1903 ...	Under-ground ...	2	17	19	5·45	5·96	5·90
	Above-ground ...	—	7	7	—	·93	·74
	Total... ..	2	24	26	·88	2·32	2·06
1904 ...	Under-ground ...	3	15	18	7·59	4·71	5·04
	Above-ground ...	2	12	14	·85	1·46	1·32
	Total... ..	5	27	32	1·82	2·37	2·26

\* Excluding Barkly West mines.

† Reports of the Inspector of Mines for Kimberley, &c., for 1903 and 1904, Cape Town, and Statistical Register for 1903, Cape Town.



## CAPE COLONY—continued.

## Kimberley Diamond Mines—continued.

TABLE 336.  
CAUSES OF ACCIDENTS in 1903.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud-rushes... ..	3	—	4	4	—	—	—
Falls of ground ... ..	30	—	9	9	3	19	22
Falling down “passes” ... ..	1	—	1	1	—	—	—
Machinery ... ..	1	—	—	—	1	—	1
Whilst ascending or descending by machinery.	2	—	1	1	—	1	1
Falling down shaft ... ..	2	1	—	1	1	—	1
Falling off staging in shaft ... ..	1	—	1	1	—	—	—
Falls from ladders... ..	4	—	—	—	—	4	4
Ignition of gas ... ..	—	—	—	—	—	—	—
Ground falling from side of shaft	2	—	—	—	2	—	2
Timber falling down shaft ... ..	2	—	1	1	—	1	1
On tramways or by trucks ... ..	9	—	—	—	1	8	9
Explosives ... ..	3	1	—	1	—	2	2
Miscellaneous ... ..	6	—	—	—	—	6	6
Total under-ground ... ..	66	2	17	19	8	41	49
<i>Surface and Open Works.</i>							
Falls of ground and débris ... ..	44	—	1	1	—	47	47
On tramways or by trucks ... ..	82	—	1	1	8	73	81
Machinery ... ..	5	—	1	1	2	2	4
Falling from face of open mine]... ..	2	—	—	—	—	2	2
Timber thrown down open mine	2	—	1	1	—	1	1
Burns from paraffin lamp ... ..	1	—	1	1	—	—	—
Explosives ... ..	5	—	—	—	—	9	9
Miscellaneous ... ..	17	—	2	2	8	8	16
Total ... ..	158	—	7	7	18	142	160
Totals (under and above ground)	224	2	24	26	26	183	209

## Ceylon.\*

*Gems.*—In Ratnapura District 1,535 gem pits were at work during the year 1904, as against 365 in 1903, the principal stones found being rubies and cats' eyes. In Kandy District moonstones are obtained from mines at Attaragalla and Yatawara.

*Gold.*—Indications of the precious metal have been found in several places, but they are not sufficient at present to justify mining operations.

*Graphite.*—Plumbago or graphite is the most important mineral produced in Ceylon; it occurs in gneiss and mica schist, and the workings are sometimes carried on to a depth of from 150 to 200 yards. The methods of dressing the ore at Colombo are described in a paper † by Mr. G. A. Stonier (late H.M. Inspector of Mines in India).

*Mica.*—A small quantity is exported annually.

*Salt.*—This is obtained from salt lagoons or "pans," and the manufacture is a Government monopoly.

*Stone.*—"Cabook" is a local name for laterite, the most useful building stone in the island.

TABLE 338.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1903 and 1904.

Kind of Workings.	Under-ground.			Above-ground.			Total Number of Persons Employed in Mines and Mineral Workings.
	Males.	Females.	Total.	Males.	Females.	Total.	
Mines ... ..	10,807	—	10,807	26,251	4,519	30,770	41,577
Mineral Workings other than Mines.	1,714	79	1,793	18,470	3,888	22,358	24,151
Total for 1904 ...	12,521	79	12,600	44,721	8,407	53,128	65,728
Total for preceding year.	14,367	10	14,377	48,196	11,645	59,841	74,218

TABLE 339.

QUANTITY and VALUE of the MINERALS produced during the Years 1903 and 1904.

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coral ... ..	455	462	85	26,393	26,817	6,892
Mica (exported) ... ..	owt 7	kilos. 356	40	owts. 4	kilos. 203	39
Plumbago (exported) ... ..	24,105	24,482	401,755	26,060	26,478	434,336
Precious stones and pearls ... ..	—	—	1,879	—	—	77,630
Salt ... ..	2,696‡	2,730	5,390	33,912	36,488	76,815
Stone :—	blocks					
"Cabook" ... ..	3,238,650	—	5,561	—	—	5,971
Gneiss ... ..	20,103	20,426	3,139	—	—	376
Granite ... ..	cubes 56,536	—	28,203	—	—	47,400
Gravel ... ..	21,340	21,682	2,158	—	—	6,867
Rubble stone ... ..	1,109	1,127	70	—	—	13,894
Total value ... ..	—	—	448,280	—	—	670,220

\* Blake, "Ceylon Report for 1903." *Colonial Report*, Annual, No. 425 [Cd. 2238-2], London, 1904, pp. 27 and 33. Official Return furnished by the Government of Ceylon, and *Blue Books for Ceylon for 1903 and 1904*.

† "Graphite Mining in Ceylon and India." *Transactions of the Inst. of Min. Eng.*, 1904.

‡ Manufactured salt.

TABLE 340.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS during the Years  
1903 and 1904.

Kind of Workings.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.		
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Above-ground.	Under and Above Ground.
Mines ...	12	—	12	6	—	6	18	1·11	·19	·43
Openworks...	—	—	—	1	—	1	1	—	·04	·04
Total for 1904.	12	—	12	7	—	7	19	·95	·13	·29
Total for pre- ceding year.	16	—	16	3	—	3	19	1·11	·05	·26

## Channel Islands.

The average number of persons employed each year in the stone quarrying industry of the Channel Islands is about 1,200.

TABLE 341.

QUANTITY and VALUE of STONE exported during the Years 1903 and 1904.\*

Mineral and Islands where obtained.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
Guernsey and Jersey :	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Stone, dressed or rough (exported).	408,090	414,639	220,088	484,081	491,790	256,033

## Christmas Island.†

This island possesses deposits of phosphate of lime which are rich enough to be of economic value. The phosphatic rock now being worked on a large scale is, in part at all events, a limestone altered into phosphorite by the percolation from overlying guano. Between five and six hundred persons are employed, and the shipments for 1904 were 71,757 tons, as against 70,096 tons in 1903. 30,771 tons of the quantity shipped in 1904 had previously been subjected to a drying process, which eliminated nearly all the moisture.

\* Annual Statement of Trade of the United Kingdom for 1903, Vol. II. [Cd. 2081], p. 358.

† Taylor, "Straits Settlements Report for 1902." Colonial Report, Annual, No. 406 [Cd. 1768-11], London, 1903, p. 18, and Annual Report on the District Office, Christmas Island, for the year 1904.



**Cyprus.\***

*Copper*.—This is obtained from the ancient copper mine at Lymni, in Papho; small quantities only are at present exported for experiment.

*Gypsum*.—As shown by the table, gypsum is of some importance, and the output and value are increasing.

*Salt*.—The value of the salt obtained by allowing sea water to evaporate under the action of the sun's rays amounted to £12,973 during 1904.

*Umber*.—"Terra umbra" has long been known as a product of Cyprus, and is worked in the Larnaca and Limassol Districts.

In addition to these minerals, sandstone and limestone are quarried for building and other purposes; but the quantities are unknown.

The following are approximately the numbers of persons employed in getting minerals:—Gypsum 60, umber 20, salt 60 for about 1 month each year, and quarrying stone 120.

TABLE 342.

QUANTITY and VALUE of the MINERALS produced during the Years 1903 and 1904.

Minerals.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gypsum (exported)	10,349	10,515	5,919	11,115	11,293	6,527
Salt (collected) ...	2,439	2,478	8,130	3,892	3,954	12,973
Umber (exported)	3,130	2,180	1,543	2,268	2,304	1,138
Total value ...	—	—	15,592	—	—	20,638

**Dominica† (Leeward Islands).**

There is a sulphur mine at Soufrière on this Island.

**Federated Malay States.‡**

*Gold*.—The output of fine gold during the year 1904 according to Table 344 was 16,848 ozs., but the total quantity of gold exported in that year was 20,157 ozs. The Raub Australian Co. produced 7,197 ozs. and the Malaysian Co. 3,669 ozs. during the year.

*Tin*.—The Malay Peninsula is the great tin-producing region of the world at the present day, and the States with the largest output are under British protection. The ore is obtained almost exclusively from alluvial deposits, worked partly by the open quarry method and partly by true underground mining.

All the States with the exception of Negri Sembilan show an increase in the output in 1904, and an increase in the total value of £50,259 compared with 1903. The quantity obtained in Perak in 1904 was 26,399 tons, or more than 50 per cent. of the total quantity of metallic tin obtained in the four States.

Hydraulic mining is largely carried on for the purpose of working tin deposits in the Kinta district of Perak, and near Seremban in Negri Sembilan. There were 41 monitors at work in all the States in 1904.

\* Blue Books for Cyprus for 1901-02 and 1902-03, and Official Return furnished by the Government of Cyprus.

† Acting Governor Bell "Leeward Islands—Report for 1904-5" *Colonial Reports*—Annual No. 478 [Cd. 2,684-24] 1905, p. 23.

‡ Official Return furnished by the Mines Department, Kuala Lumpur, Selangor. *Annual Report on the Federated Malay States for 1904 and Report of the Senior Warden on the Administration of the Mines Department and on the Mining Industry for the year 1904*, Kuala Lumpur, 1905.



FEDERATED MALAY STATES—*continued.*

As regards vein mining, the Pahang Company's concession at Kuantan and the French Mining Company's land at Lahat (Perak) are practically the only two places where work of any importance is being carried on. The latter company has recently developed a rich deposit in the limestone.

The total number of coolies employed at the mines of the four different States, Negri Sembilan, Pahang, Perak, and Selangor, during the year 1904 amounted to 192,669, or an increase of 6,332 on the previous year's figures.

TABLE 343.

PERSONS EMPLOYED at MINES during the Years 1903 and 1904.

State.					1903.	1904.
Negri Sembilan	...	...	...	...	21,318	22,347
Pahang	...	...	...	...	7,435	9,511
Perak	...	...	...	...	82,872	90,812
Selangor	...	...	...	...	74,712	69,999
Total	...	...	...	...	186,337	192,669*

TABLE 344.

SUMMARY of QUANTITY and VALUE of MINERALS produced in the four States during the Years 1903 and 1904.

Mineral.	1903.†			1904.		
	Quantity.		Value.	Quantity.		Value.
Gold (Fine)	Statute Tons. ozs. 15,564	Metric Tons. kilos. 484	£ 66,111	Statute Tons. ozs. 16,848	Metric Tons. kilos. 524	£ 71,564
Tin†	50,119	50,983	6,162,862	50,967	51,785	6,213,121
Total Value	—	—	6,228,973	—	—	6,284,685

TABLE 345.

NEGRI SEMBILAN.

Mineral.	1903.†			1904.		
	Quantity.		Value.	Quantity.		Value.
Gold (Fine)	Statute Tons. ozs. 2,664	Metric Tons. kilos. 83	£ 11,316	Statute Tons. ozs. 1,646	Metric Tons. kilos. 51	£ 6,991
Tin†	5,099	5,181	627,051	5,051	5,132	615,690

TABLE 346.

PAHANG.

Mineral.	1903.†			1904.		
	Quantity.		Value.	Quantity.		Value.
Gold (Fine)	Statute Tons. ozs. 12,406	Metric Tons. kilos. 386	£ 52,697	Statute Tons. ozs. 13,925	Metric Tons. kilos. 433	£ 59,149
Tin†	1,511	1,535	185,743	1,635	1,661	199,323

\* 150,120 of these persons were employed in opencast workings, 21,267 underground in mines, and 21,282 in hydraulic mining.

† Revised figures.

‡ Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore smelted at Singapore and elsewhere.



FEDERATED MALAY STATES—continued.

TABLE 347.  
 PERAK.

Mineral.	1903.*			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold (Fine) ... ..	ozs. 494	kilos. 15	2,098	ozs. 1,277	kilos. 40	5,424
Tin† ... ..	26,045	26,463	3,202,629	26,399	26,823	3,218,222

TABLE 348.  
 SELANGOR.

Mineral.	1903.*			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin† ... ..	17,464	17,744	2,147,439	17,882	18,169	2,179,886

TABLE 349.  
 DEATHS from ACCIDENTS at MINES during the Years 1903 and 1904.

State.	Number of persons killed.		Death-rate per 1,000 persons employed.	
	1903.	1904.	1903.	1904.
Nagri Sembilan ... ..	18	8	·61	·35
Pahang ... ..	6	17	·81	1·78
Perak ... ..	20	30	·24	·33
Selangor... ..	24	24	·32	·34
Total ... ..	68	79	·34	·41

Gambia.‡

Vast ridges of ironstone exist in the Upper River territories, not far from the Gambia River, but are not worked.

Gold Coast.§

The name of the Colony points to its mineral resources. The principal gold mines are situated in Wassaw, Sefwhi, and Southern Ashanti Districts. The general improvement in the mining industry in 1904 was largely due to the opening of the railway to Kumasi, as it enabled the companies to get heavier stamps up to their mines. The gold exported in 1904 exceeded the quantity exported in 1903 by 33,697 ozs. The increase came from the mines in the Wassaw and Sefwhi districts. During the year satisfactory progress was made in dredging operations, eight dredges were at work, viz., four on the Offin River, two on the Birrim River, and two on the Ankobra River.

Gold is reported to exist in the Northern Territories of the Gold Coast, but at present operations have not advanced beyond the prospecting stage.||

\* Revised figures.

† Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore smelted at Singapore and elsewhere.

‡ "Gambia, Report for 1904." *Colonial Reports*, Annual, No. 452 [Cd. 2238-29], 1905.

§ Official Return furnished by the Colonial Secretary of Gold Coast Colony, and *Colonial Reports*, Annual, No. 465 [Cd. 2684-11], London, 1905.

|| *Colonial Reports*, Annual, No. 457 [Cd. 2684-3], 1905, p. 11.



GOLD COAST—*continued.*

Salt is made in the marshes near Adda and Kwitta, but the quantity is not given.

The ores of silver, mercury, lead, tin, copper, and iron have been found, and sandstone is abundant, but these minerals are not at present worked.

TABLE 350.

PERSONS EMPLOYED at GOLD MINES during the Years and 1903 and 1904.

Year.	Under-ground.	Above-ground.			Total.
	Males.	Males.	Females.	Total.	
1903 ... ..	2,726	4,046	7	4,053	6,779
1904 ... ..	6,103	10,941	—	10,941	17,044

TABLE 351.

QUANTITY and VALUE of GOLD EXPORTED during the Years 1903 and 1904.

Metal.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
Gold ... ..	Ozs. 70,763	Kilos. 2,201	£ 254,747	Ozs. 104,460	Kilos. 3,249	£ 386,500

TABLE 352.

DEATHS from ACCIDENTS at GOLD MINES during the Year 1904.

Year.	Under-ground.	Above-ground.	Total.	Death-rate per 1,000 persons employed.		
				Under-ground.	Above-ground.	Total.
1903 ... ..	13	2	15	4.77	.49	2.21
1904 ... ..	11	3	14	1.80	.27	.82

In 1904 an Ordinance was passed to regulate the rights of prospecting and mining in the Northern Territories of the Gold Coast.

## India.\*

The most important minerals worked are :—coal, gold ore, manganese ore, mica, petroleum, and salt.

*Asbestos.*—Prospecting operations for this mineral are being carried on in Ajmer-Merwara.

*Chromite.*—The chromite deposits in Baluchistan were discovered in 1901, but not worked until 1903. The output in 1904 was chiefly from the Quetta-Pishin district.

*Coal.*—With a total output of 8,216,706 tons of coal in 1904, India retains the lead as a coal producer amongst the Colonies of the British Empire. Nearly 86 per cent. of the coal produced in India comes from Bengal ; the remainder is obtained from the Punjab, Central Provinces, Assam, Burma, Central India, Rajputana, the Nizám's Dominions, Kashmir, and Baluchistan.

The coal raised in Rajputana is lignite or brown coal ; the output in 1904 amounted to 45,078 tons, and is included in the above total.

\* Government of India, Department of Revenue and Agriculture, *Statistics of Mineral Production in India in the ten years 1894 to 1903*, Calcutta, 1904 ; Holland, *Records of the Geological Survey of India*, Vol. xxxiii., Part I., Calcutta, 1906 ; and information furnished by the Chief Inspector of Mines in India.



## INDIA—continued.

The resources of India as a coal-producing country are immense, and very large areas, rich in mineral fuel, have not yet been touched. The principal coal mines are in the following coalfields and districts:—Raniganj, Giridih, and Jherria in Bengal, Singareni in the Nizám's Territory, Lakhimpur in Upper Assam, Mohpani and Warora in the Central Provinces, and at Umaria in the Central Indian Agency. Very little coal is used for household purposes, the bulk of it is used for railway locomotives, as bunker coal for the steamers, and for steam raising at the mills.

*Gems and Precious Stones.*—Upper Burma has long been famous for its rubies, and the mineral is, next to petroleum, the most profitable source of revenue amongst the Burmese minerals. In addition, Upper Burma yields jade, a small amount of inferior amber, and some tourmaline.

*Gold.*—The most important mineral industry in India, as regards the value of the output, is gold mining, although it employs only about one-third of the number of persons engaged in getting coal. The country occupies the sixth position amongst the leading gold-producing countries of the world; small quantities of the precious metal are washed from river sands in very many parts of the country, and dredging operations are being carried on with satisfactory results in the upper reaches of the Irawadi River, but the total amount so obtained is insignificant compared with the output of the quartz veins of Kolar, Mysore. The total production of gold in 1904 was 618,746 ozs., and the value of this quantity, £2,366,079, is equal to nearly twice the total value of the coal obtained in the same period.

In Mysore the output in 1904 was 607,554 ozs. (18,897 kilos.) of fine gold, and the number of persons employed in the gold mines was 29,494.

The remainder of the output was obtained from the Nizám's Dominions, Burma, Punjab, and the United Provinces.

*Iron.*—The various ores of iron, viz., magnetite, hematite, limonite, and clay ironstone, occur abundantly, and are smelted on a small scale by the aid of charcoal all over India. With the exception of Barakar, in Bengal, where the conditions for the manufacture of pig iron are favourable on account of the proximity of iron ore and good coking coal, and the smelting is carried on by modern methods, no successful attempt has been made to manufacture iron on a large scale.

*Manganese Ore.*—The industry of quarrying manganese ore was commenced a little more than 11 years ago, and has developed so rapidly that India now ranks as one of the world's greatest producers of manganese. Although the output in 1904 shows a decrease compared with that of 1903, the Inspector of Mines states that the industry shows no serious signs of languishing. The chief deposits are near Kamptee in the Central Provinces, and in the Vizagapatam district, Madras. The ore in the former district yields from 51 to 54 per cent. of metal. Practically the whole of the manganese ore raised in India is exported.

*Mica.*—Quarrying and mining for mica are principally confined to the provinces of Bengal and Madras, but a small quantity is obtained in Ajmer-Merwara. The returns of the Indian production are reported to be considerably below the quantity actually obtained, and are much lower than the export figures. A large quantity of the poorer grade Mica is used locally for ornamental purposes. The total value of the Indian mica is greater than that of the Canadian and United States combined.

*Petroleum.*—The oil wells in Upper Burma, where petroleum has been obtained for more than 2,000 years, furnished in 1904 nearly 116 million gallons, and Assam 2½ million gallons. The total exports from Burma of the products of petroleum in 1903–4 were: 35,586,378 gallons of kerosene, 3,235,803 gallons of other kinds of mineral oil, and 35,969 cwt. of paraffin wax.

*Salt.*—The sources of the salt supply are: (a) rock-salt mines and quarries of the Punjab, Kohat, and Mandi State; (b) lakes and wells of Rajputana, wells and springs of the Punjab, and Upper Burma; (c) evaporation of sea water in Bombay, Sind, Madras, and Lower Burma. The production fluctuates with the seasons. The output for 1904 amounted to 1,104,198 tons. More than two-thirds of this quantity was made from sea water.

*Saltpetre.\**—The nitre of India is obtained from a natural efflorescence from the soil, especially in the province of Bihar. The crude earth is purified by solution, filtration, evaporation, and crystallization.

\* Hooper, *Review of the Mineral Production in India for 1897*, Calcutta, 1898, p. 54.

INDIA—continued.

TABLE 354.

SUMMARY of OUTPUT and VALUE of MINERALS during the Years 1903 and 1904.\*

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Amber ... ..	(Not stated)	—	414	(Not stated)	—	838
Chromite ... ..	284	289	327	3,596	3,654	4,137
Coal ... ..	7,438,386	7,557,754	1,299,716	8,216,706	8,348,561	1,398,826
Diamonds ... ..	carats 210	grams. 41	2,579	carats 286	grams. 59	2,636
Gold ... ..	oss. 603,787	kilos. 18,780	2,303,144	oss. 618,746	kilos. 19,245	2,366,079
Graphite ... ..	3,394	3,448	16,970	3,256	3,308	16,726
Iron ore ... ..	(Not stated)	—	14,963	71,608	72,757	12,617
Jadestone... ..	132†	134	55,435	189	192	50,726
Magnesite ... ..	826	839	550	1,315	1,336	876
Manganese ore ... ..	171,806	174,563	151,530	150,297	152,707	129,632
Mica ... ..	1,077†	1,094	86,296	979	995	97,933
Petroleum ... ..	gals. 87,859,069	352,348	354,365	gals. 118,491,382	475,869	473,971
Rubies ... ..	carats 227,213	grams. 46,672	88,819	carats 265,901	grams. 54,618	90,612
Salt ... ..	823,184	836,394	307,713	1,104,198	1,121,918	412,851
Saltpetre (refined) ... ..	20,630†	20,961	290,196	19,548	19,862	266,349
Tin ore ... ..	110	112	9,153	71	72	8,353
Total Value ...	—	—	4,982,170	—	—	5,333,161

TABLE 355.

OUTPUT and VALUE of MINERALS, classified according to the PROVINCES or STATES, for the Years 1903 and 1904.\*

Mineral and Province or State where wrought.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
INDIA.						
Assam.						
Coal ... ..	239,328	243,169	75,791	266,765	271,046	84,592
Petroleum ... ..	gals. 2,528,785	10,156	8,429	gals. 2,585,920	10,385	(Not stated)
Bengal.						
Coal ... ..	6,361,212	6,463,294	951,802	7,063,680	7,177,035	1,015,147
Iron ore ... ..	(Not stated)	—	—	63,015‡	64,026	11,103‡
Mica ... ..	900†	914	67,802	658	669	59,187
Salt ... ..	94	96	43	88	89	(Not stated)

\* Government of India. Department of Revenue and Agriculture, *Statistics of Mineral Production in India in the ten years 1894 to 1903*, Calcutta, 1904; and *Records of the Geological Survey of India*, Vol. xxxiii., Part I., Calcutta, 1906.  
† Exported.  
‡ Estimated.



## INDIA—continued.

TABLE 356.

NUMBER OF DEATHS FROM ACCIDENTS AT MINES AND QUARRIES during the Years 1903 and 1904.\*

Class of Mines or Workings.	1903.			1904.		
	Number of Deaths.			Number of Deaths.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	88	9	97	55	12	67
Gems ... ..	4	1	5	2	—	2
Gold† ... ..	60	11	71	43	3	46
Manganese ... ..	—	1	1	1	—	1
Mica ... ..	7	2	9	11	1	12
Salt ... ..	—	—	—	—	—	—
Slate, &c. ... ..	2	—	2	1	1	2
Total ... ..	161	24	185	113	17	130

TABLE 357.

DEATH-RATE FROM ACCIDENTS AT MINES AND QUARRIES during the Years 1903 and 1904.\*

Class of Mines or Workings.	1903.			1904.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	1·52	·32	1·13	·86	·42	·72
Gems ... ..	2·38	·13	·54	·69	—	·55
Gold ... ..	3·31	1·05	2·48	2·39	·24	1·50
Manganese ... ..	—	·83	·14	·34	—	·22
Mica ... ..	1·35	·51	·99	1·27	·20	·88
Salt ... ..	—	—	—	—	—	—
Slate, &c. ... ..	1·34	—	·80	1·92	·57	·88
Total ... ..	1·75	·45	1·28	1·12	·32	·85

\* Report of the Chief Inspector of Mines in India for the year ending 31st December 1903, Calcutta 1904.

† Including Mysore Gold Mines.

TABLE 558.

## DEATHS FROM ACCIDENTS at the MYSORE GOLD MINES.\*

Year.	Persons Employed.	Deaths.			Death-rate per 1,000 Persons Employed.		
		Under- ground.	Above- ground.	Total.	Under- ground.	Above- ground.	Total.
1900 ... ..	24,587	55	8	63	4.17	.70	2.56
1901 ... ..	25,060	61	14	75	4.29	1.29	2.99
1902 ... ..	26,268	52	6	58	3.30	.57	2.21
1903 ... ..	27,355	58	11	69	3.29	1.13	2.52
1904 ... ..	29,494	42	3	45	2.38	.25	1.52
Average death-rate	—	—	—	—	—	—	2.33

During the year 1904, 26 rules applicable to all Mines in British India were made under the Indian Mines Act, 1901. They relate to (I.) single shafts and outlets; (II.) raising and lowering persons at mines; (III.) security of roads and working places; (IV.) plans (12 years being fixed as the period for which a plan of an abandoned mine must be deposited before it can be seen, except with the consent of the owner, by the public); (V.) explosives (storage and use); (VI.) ventilation and lighting of mines; (VII.) miscellaneous matters, such as the fencing of mines and machinery, the provision of safety valves and steam and water gauges to boilers, the provision of ambulances, &c., at mines, the security of sides of shafts, and the fixing of the speed of winding after a certain point of the shaft is reached, at not more than 3 miles an hour, unless the winding apparatus is provided with some automatic contrivance to prevent overwinding.

A further rule was made in the same year, requiring owners of mines to furnish to the Inspector not later than the 1st February each year, an annual return of the persons employed and output of minerals at their mines.

#### Labuan. (See BRITISH BORNEO.)

#### Leeward Islands. (See DOMINICA, REDONDA, and VIRGIN ISLANDS.)

#### Malta.†

According to the last census, taken in the year 1901, 1,060 persons were employed in the quarries of the Colony.

A soft oolitic limestone is quarried for building purposes; 65,245 slabs, 244 blocks, and 857 tons in blocks of stone were exported in the year ended March 31st, 1904, and 53,093 slabs and 1,050 tons in bulk in 1904-5.

#### Natal (including ZULULAND).‡

The output of coal continues to increase. In 1904 there were 18 electrical coal-cutters and 29 worked by compressed air, in operation, as against 13 of the former kind only in 1903; 32 per cent. of the total output of coal was obtained by machines.

\* Official Returns furnished by the Chief Inspector of Mines in India, and the Officiating Secretary to the Government Geological Department of Mysore.

† Gov. Sir C. M. Clarke, "Malta. Report for 1903-4." *Colonial Reports*—Annual, No. 139 [Cd. 2238-16], and Deputy Gov. Sir W. F. Kelly, Report for 1904-5, No. 462 [Cd. 2684-8]; also Official Return furnished by the Chief Secretary to the Government of Malta.

‡ *Reports on the Mining Industry of Natal for 1903 and 1904.* Pietermaritzburg.

NATAL—continued.

In addition to coal, the Colony is stated to possess deposits of asbestos, copper ore, gold ore, graphite, gypsum, lead ore, limestone, marble, mica, molybdenum, nickel ore, and slate. During the year 1904 the development of the workings of several of these minerals was continued.

TABLE 359.

PERSONS EMPLOYED at PRODUCING COLLIERIES during the Years 1903 and 1904.

	Year.	Below-ground.	Above-ground.	Total.
	1903	2,913	1,492	4,405
	1904	3,066	1,726	4,792

TABLE 360.

QUANTITY and VALUE of COAL and GOLD produced during the Years 1903 and 1904.

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal ... ..	713,548	724,999	418,975	858,298	872,072	457,000
Copper ore... ..	—	—	—	89*	90	Not stated.
Gold (fine) ... ..	ozs. 1	—	2	—	—	—
Lime ... ..	518	526	1,497	729	740	2,104
Mica ... ..	27	27	Not stated.	—	—	—
Molybdenum ore...	—	—	—	66*	67	Not stated.

TABLE 361.

DEATHS from ACCIDENTS at PRODUCING COLLIERIES during the Years 1903 and 1904.

Year.	Under-ground.			Above-ground.			Total Under-ground and Above-ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1903	13	—	13	—	—	—	13	2·95
1904	15	—	15	1	—	1	16	3·34

No deaths occurred in 1904 at collieries which had not reached the production stage.

Newfoundland.†

The important mineral exports from Newfoundland are copper ore, copper regulus, and iron ore.

*Coal.*—The Government having appropriated \$10,000 for the exploration of coal, a considerable amount of work in the shape of boring and sinking pits was performed in 1904. A seam of coal 2½ feet thick been has discovered 60 feet below the old seam found in 1895.

*Copper Ore.*—The total output of copper ore shows an increase of 20,049 tons compared with that of 1903. The Union Mine at Tilt Cove alone produced 73,082 tons during the year.

\* These quantities are only samples of ore obtained for analysis.

† Report on the Mineral Resources for 1904, by J. P. Howley, Director of Geological Survey of Newfoundland, 1905.



## NEWFOUNDLAND—continued.

*Gold.*—The gold mining operations at Sop Arm Mine in White Bay have now been abandoned. Only a small quantity of gold (11 ozs.) was extracted from auriferous quartz in 1904, and this was obtained from a mine at Goldenville, near Ming's Bight.

*Iron Ore.*—The whole of the ore comes from Bell Island, Conception Bay, where valuable deposits of red hæmatite are being mined on a large scale; the ore is shipped to Nova Scotia and to the United States.

*Petroleum.*—Five wells have been sunk for the purpose of obtaining petroleum. The yield in 1904 was 700 barrels of oil.

*Slate.*—The falling off in output of roofing slate in this colony during 1904 is attributed to a disastrous fire which destroyed much of the quarry plant. Most of the output is exported to England.

TABLE 362.

PERSONS EMPLOYED at MINES and QUARRIES during the Years 1903 and 1904.

Kind of Workings.						1903.	1904.
Copper mines	...	...	...	...	...	624	569
Iron ore workings	...	...	...	...	...	844	1,131
Pyrites	...	...	...	...	...	250	285
Gold mines	...	...	...	...	...	54	10
Barytes	...	...	...	...	...	30	28
Slate quarries	...	...	...	...	...	265	137
Talc	...	...	...	...	...		100
Other " and workings...	...	...	...	...	...		115
Total	...	...	...	...	...	2,067	2,375

TABLE 363.

QUANTITY and VALUE of the MINERALS produced during the Years 1903 and 1904.

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Barytes	4,300	4,369	1,767	2,000	2,022	1,027
Copper ore and regulus*	87,790	89,199	70,490	107,839	109,570	95,905
Gold	1,000†	1,016	616	ozs. 6,242‡	kilos. 194	25,607
Granite...	5,400	5,487	6,658	1,945	1,976	2,373
Iron ore	588,795	598,244	120,985	589,739	599,203	121,179
Iron pyrites	42,000	42,674	43,151	60,200	61,166	43,295
Limestone	1,200	1,219	123	Not stated.	—	—
Petroleum	—	—	—	bls. 700	—	233
Sand and gravel	—	—	—	2,300	2,337	1,192
Slate	4,200	4,267	12,945	2,700	2,743	7,767
Stone :—						
Cobble	4,800	4,877	460	4,000	4,064	411
Building	4,000	4,064	822	3,100	3,150	955
Talc	—	—	—	1,562	1,587	1,438
Not specified	—	—	—	—	—	41
Total Value	—	—	258,017	—	—	301,423

\* The copper ore contains a little gold. It is estimated that 3,921 tons of metallic copper were obtainable from the copper ore, and 6,242 ozs. of fine gold and 5,169 ozs. of fine silver from copper ore and gold quartz in 1904.

† Gold quartz.

‡ Fine gold; 10 ozs. of this quantity only were obtained from gold quartz in 1904 and the remainder from copper ore

## NEWFOUNDLAND—continued.

TABLE 364.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1903 and 1904.

Kind of Workings.	1903.		1904.	
	Number of Persons Killed.	Death Rate per 1,000 Persons Employed.	Number of Persons Killed.	Death Rate per 1,000 Persons Employed.
Copper Mines ... ..	4	6.41	2	3.51
Iron Ore Workings ... ..	1	1.18	1	.88
Pyrites Workings ... ..	1	4.00	—	—
Slate Quarries ... ..	—	—	1	7.30
Total ... ..	6	2.90	4	1.68

## New Guinea (see BRITISH NEW GUINEA).

## New Zealand.\*

The three principal minerals worked in New Zealand are coal, gold, and kauri gum.

*Coal.*—A marked increase in the output of coal for the Colony is recorded in 1904, although the number of collieries at work during the year was only 168 as compared with 178 in the previous year. The most important both as regards quantity and quality of coal produced are situated near Westport, on the west coast of the Middle Island. More than one-third of the total output of New Zealand is brown coal or lignite, most of which is obtained in the Southern district of Middle Island; many of the workings are open-cast.

The output from the coal mines which are being worked by the State under "The State Coal Mines Act, 1901," was at Point Elizabeth 92,949 tons, and at Seddonville 40,090 tons during the year ended 31st March, 1905.†

*Gold.*—The output of gold in 1904 shows a decrease compared with that of 1903, which is largely accounted for by the reduced output of the Crown Mines at Karangahake and of several small mines on the Hauraki Peninsula. The precious metal occurs in various parts of the Islands; it is extracted by ordinary alluvial diggings, by hydraulic mining, by dredging river beds and river flats, and by quartz mining. Probably there is more gold dredging in New Zealand than in any other part of the world, and this branch of mining finds employment for more than 2,000 persons in the Colony. During the year 186 dredges were at work, as against 201 in 1903. This reduction is attributed chiefly to the fact that during the boom of four or five years ago several dredges were put on claims which would have been better worked by hydraulic methods, with the result that at some of the works dredging operations have been discontinued.

*Iron Ore.*—It is expected that the deposits of iron ore at Parapara will shortly be worked.

*Kauri Gum.*—Digging kauri gum upon the sites of old pine forests affords employment to a large number of Europeans and natives.

*Phosphate of Lime.*—Deposits of phosphate of lime discovered in the spring of 1902 are being worked near Milton, Otago, and during the past year 2,678 tons were quarried.

\* Hon. James McGowan, *New Zealand, Mines Statement*. Wellington, 1905, and *Report of the Department of Mines on the Goldfields of New Zealand for the year 1904*, Wellington, 1905.

† *New Zealand. Report on the working of State Coal Mines for the year ending 31st March, 1905*, Wellington, 1905.



## NEW ZEALAND—continued.

TABLE 368.

DEATHS from ACCIDENTS at MINES and DREDGING WORKS during the  
Years 1903 and 1904.\*

Kind of Workings.	1903.		1904.	
	Number of Deaths.	Death-rate per 1,000 Persons Employed.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
Coal mines ... ..	4	1.40	4	1.22
Gold mines ... ..	9	2.50	6	1.26
„ alluvial, hydraulic, sluicing and dredg- ing.	10	1.51	9	1.47
Total ... ..	23	1.76	19	1.34

On the 5th November, 1904, the Mining Act Amendment Act, 1904, was passed. It amended the Mining Act of 1898, and, amongst other matters, provides for lands which may be set apart as a public reserve or endowment, or native reserve, being made available for mining at a depth below 50 feet from the surface; it also sanctions, under certain regulations, the granting of surface leases in mining townships.

## Nigeria.†

During the year 1904 the Niger Company made a thorough investigation of the tin deposits in the area for which they hold an exclusive prospecting licence, the result of which is reported to be satisfactory.

In 1902 the Company exported 21½ cwts. of tin, valued at £79. The tin found by them in the course of prospecting, is alluvial and consists of coarse and fine grains; it is at present worked by the natives over an area of 11 miles of river and tributaries. The fine tin has been traced for a further distance of 14 miles, making altogether a length of 25 miles of river commercially workable for this metal.

In addition to tin, Nigeria possesses deposits of several other minerals, some of which are at present being worked, *e.g.*, limestone at Ekoi, granite at Uwet, and sandstone at Onitsha. Salt is obtained from brine springs at Awe and elsewhere, and the present output is estimated at 277 tons per annum.

In 1903 Professor Dunstan, F.R.S., Director of the Imperial Institute, made a special report ‡ on a series of mineral specimens received from the Protectorate.

Two amendments of the Minerals Proclamation of 1902 were made in 1904, one of which excluded building stone and the winning of salt, soda, potash and iron by natives from the operation of the principal Proclamation, and the other provided for the payment of duties on profits made in mining, &c.

## North Borneo. (See BRITISH BORNEO.)

## Nova Scotia. (See CANADA.)

\* Hon. James McGowan, *New Zealand, Mines Statement*. Wellington, 1905. C.—2, pp. 1 and 9.

† Sir F. Lugard. "Northern Nigeria Report for 1904." *Colonial Reports*—Annual No. 476 [Cd. 2684-22]. London, 1905, and Egerton "Southern Nigeria Report for 1904," No. 459 [Cd. 2684-5], 1905.

‡ "Northern Nigeria" *Colonial Reports*—Miscellaneous, No. 26 [Cd. 1939], London, 1904.



Ontario. (See CANADA.)

Orange River Colony.\*

*Coal.*—The Colony possesses excellent coalfields, and the coal seams vary in thickness from one or two inches to 40 feet. Several mines have now entered the producing stage, and the ‘Clydesdale’ is described in the Report of the Department as the premier coal producing mine in South Africa.

*Diamonds.*—The principal mines are the Jagersfontein, Koffyfontein, Lace, and the Orange Free State and Transvaal. During the year ended December, 1904, the total output of diamonds was 284,604 carats, valued at £866,111, and of this quantity the Jagersfontein Mine produced 236,159 carats.† The production of this important mine for the year ended 31st March, 1905, was 266,225 carats, of £818,513 value, which is equivalent to an average value of 61s. 5d. †88 per carat.

*Salt.*—Although salt springs occur in several places in the Colony, they are only worked at two places to any extent, viz., at Zoutpan in the Jacobsdal district, and at Haagenstad in the Bloemfontein district. The industry is therefore capable of very considerable development.

With regard to other minerals, prospecting for gold is still being carried on, and it is reported that the reefs discovered in the Vredefort district belong to the Witwatersrand series. Tin has been found in the Caledon River, and copper, iron, lead, petroleum, silver, sulphur, &c., are known to exist in the Colony.

TABLE 369.

AVERAGE NUMBER of PERSONS EMPLOYED‡ at COAL and DIAMOND MINES during the SIX MONTHS July—December, 1903, and the Year ended December, 1904.

Kind of Mines.	Six Months, July—December, 1903.			Year ended December, 1904.		
	Number of Persons.			Number of Persons.		
	White.	Coloured.	Total.	White.	Coloured.	Total.
Coal ... ..	78	804	882	121	942	1,063
Diamond ... ..	533	4,016	4,549	587	4,435	5,022
Total ... ..	611	4,820	5,431	708	5,377	6,085

TABLE 370.

QUANTITY and VALUE of MINERAL produced during the six months July—December, 1903, and the Year ended 31st December, 1904.

Mineral.	Six Months, July—December, 1903.			Year ended December, 1904.		
	Quantity.		Value.	Quantity.		Value.
Coal ... ..	Statute Tons.	<i>Metric Tons.</i>	£	Statute Tons.	<i>Metric Tons.</i>	£
	43,114	43,806	19,823	129,911	131,996	66,745
Diamonds ...	Carats 127,771	<i>Kilos. 26</i>	370,350	Carats 284,604	<i>Kilos 58</i>	866,111
Salt... ..	—	—	—	5,529§	5,618	8,928
Total Value	—	—	390,173	—	—	941,784

\* Orange River Colony Mines Department, Annual Reports for the years ending 30th June, 1904 and 1905, Bloemfontein.  
† The New Jagersfontein Mining and Exploration Company, Ltd. Seventeenth Annual Report and Accounts for the year ended 31st March, 1905. Kimberley, 1905. Page 14.  
‡ Excluding persons employed in “prospecting.”  
§ Output for year ended June, 1905.

ORANGE RIVER COLONY—continued.

TABLE 371.

Number of deaths from accidents at mines during the 6 months July–December, 1903, and the year ended December, 1904.

Kind of Mines.	6 Months July–December, 1903.		Year ended December, 1904.	
	Number of persons killed.	Death-rate per 1,000 persons employed.	Number of persons killed.	Death-rate per 1,000 persons employed.
Coal ... .. } Diamond ... .. }	7	1·29	19	3·12

The mining industry of the Colony is regulated by three Ordinances : (No. 3) The Mining of Precious Metals Ordinance, 1904 ; (No 4) The Mining of Precious Stones Ordinance, 1904 ; (No. 8) The Mining of Base Metals Ordinance, 1904.

Quebec. (See CANADA.)

Redonda\* (Leeward Islands).

On an average 66 persons were employed in getting phosphate during the year 1903, and 99 in 1904.

TABLE 372.

QUANTITY and VALUE of MINERAL produced during the Years 1903 and 1904.

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Phosphate of alumina ...	1,085	1,102	1,483	1,702	1,729	2,160

Rhodesia.†

The mining industry of Rhodesia made very satisfactory progress in 1904 ; gold, coal, silver and lead all show an increased production compared with the previous year.

*Coal*.—59,678 tons of coal were obtained from the Wankie coalfield, which is situated 140 miles north-west of Bulawayo. The coal is reported as being of excellent quality.

*Copper*.—Ores of this metal are reported to exist in the Lo Mogundi, Umtali and Victoria districts of Southern Rhodesia, and a considerable amount of development work was done in the last-named district in 1904 ; but it is in Northern Rhodesia that the most valuable deposits have been discovered, where the Northern Copper Co. and the Rhodesia Copper Co. have been actively engaged in mining.

\* Information furnished by the London Phosphate Syndicate, Ltd.  
† Report of the British South Africa Company for the year ending 31st March, 1905 ; Report of the Secretary for Mines for the year ended 31st March, 1904, Salisbury, 1904 ; the Ninth Annual Report of the Rhodesia Chamber of Mines for the year ended 31st March, 1905, Bulawayo, 1905 ; and information furnished by the British South Africa Company.



RHODESIA—continued.

*Gold.*—The auriferous deposits are very extensive, and the output of gold in 1904 exceeded a quarter of a million ounces. The average number of stamps at work was 507, and the total quantity of quartz crushed was 622,354 tons.

*Lead and Zinc.*—Important deposits of these minerals are stated to have been proved at the Broken Hill Mine, and, as soon as the railway is made, a continuous output is assured. The whole of the output of lead for 1903 and 1904 was obtained from the Penhalonga Proprietary Mines.

In addition to the above minerals wolfram has been discovered in the Bulawayo district, and chrome iron in the Seluke district.

TABLE 373.

Average number of persons employed at mines during the year ended 31st March, 1905.

Province.	Persons employed.			
	Under-ground.	Above-ground.	Unclassified.	Total.
Matabeleland ... ..	3,946	2,682	258	6,886
Mashonaland ... ..	2,828	1,657	346	4,831
Total ... ..	6,774	4,339	604	11,717

TABLE 374.

QUANTITY and VALUE of MINERALS produced during the years ended 31st December, 1903 and 1904.

Mineral.	1903.			1904.		
	Quantity.		Estimated Value.	Quantity.		Estimated Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal ... ..	46,870	47,622	35,152	59,678	60,636	41,492
Gold ... ..	ozs. 231,872	kilos. 7,212	827,729	ozs. 267,737	kilos. 8,327	969,342
Lead... ..	128	130	1,439	455	462	5,005
Silver ... ..	ozs. 20,715	kilos. 644	2,333	ozs. 70,146	kilos. 2,152	7,811
Total Value ... ..	—	—	866,653	—	—	1,023,650

There were 50 fatalities at mines during the year ended 31st March, 1904, but as it is not stated in what part of Rhodesia the deaths occurred, and the returns of persons employed relate to Matabeleland only, no death-rate has been calculated.

St. Lucia.\*

A sulphur mine exists at Ventine in the Soufrière district, and an attempt is being made to ship the produce obtained therefrom in the crude state.

Sarawak. (See BRITISH BORNEO.)

\* Sir G. Melville. "St. Lucia Report for 1903." *Colonial Reports*—Annual, No. 443. [Cd. 2238-20.] London, 1904, p. 10



## Somali Coast Protectorate.\*

Nothing definite is known as to the mineral resources of the country as it does not appear to have been prospected, but mica has been found and there are indications of iron ore.

## Straits Settlements.†

There are no mines of importance in the Straits Settlements proper, viz., Penang, Province Wellesley, Malacca and Singapore; the value of the alluvial tin from Malacca in 1901 was £136, and in 1902 only £60.

Laterite is quarried for road metalling in Singapore and Malacca, and granite in the islands to the east of Singapore.

## Transvaal.‡

Coal, diamonds and gold are the principal minerals worked in the Colony.

*Coal.*—The output for 1904 exceeded that of any previous year in the history of the Transvaal. About 47 per cent. of the total quantity came from the Springs-Brakpan area, and 45 per cent. from the Middelburg area.

*Diamonds.*—Considerable progress was made in the diamond mining industry in 1904, the Premier Mine being chiefly responsible for the increased output. 880,482 carats were found in the Pretoria district, and 3,848 carats in the Christiana district.

*Gold.*—The gold mining industry was in 1904, so far as the value of the output of gold was concerned, almost in as good a condition as in the year 1898, when the value (according to the figures given in Table 375A, compiled from the Report of the Government Mining Engineer) was the highest on record, and amounted to £16,240,630, as against £16,028,883 in 1904. Nearly 97 per cent. of the production of gold was obtained from the mines in the Witwatersrand area.

*Salt.*—The salt is obtained by means of evaporating the brine contained in shallow wells sunk in the Northern Transvaal.

TABLE 375.

## GOLD MINES.

	December, 1902.	December, 1903.	December, 1904.
No. of mines crushing ... ..	48	62	81
No. of stamps at work ... ..	3,010	4,635	5,850
Tons of ore crushed ... ..	398,064	622,718	818,847

TABLE 375A.

## STATISTICS of the GOLD PRODUCTION of the TRANSVAAL since 1895.

Year.	Quantity.		Value.	Year.	Quantity.		Value.
	Fine Ounces.	Kilos.	£		Fine Ounces.	Kilos.	£
1895 ...	2,017,443	62,749	8,569,555	1900 ...	348,761	10,848	1,481,442
1896 ...	2,025,510	63,000	8,603,821	1901 ...	258,032	8,025	1,097,219
1897 ...	2,743,518	85,333	11,653,725	1902 ...	1,718,921	53,464	7,301,501
1898 ...	3,823,367	118,920	16,240,630	1903 ...	2,972,897	92,467	12,628,057
1899 ...	3,637,713	113,145	15,452,025	1904 ...	3,773,517	117,370	16,028,883

The introduction of Chinese labour in the Transvaal was sanctioned by an Ordinance (No. 17) passed in 1904, a Commission to inquire into the matter of unskilled labour having previously reported (November, 1903) that the demand for native labour for the mining industry was in excess of the supply by about 126,000 labourers.

\* Consul-General Hayes Sadler, "Trade of the Somali Coast for the year 1898-1899." *Dipl. and Cons. Reports*, No. 2,384, Ann. Ser., 1900 [Cd. 1-21], and Acting-Commissioner Cordeaux "Report on the Trade and Commerce of the Somaliland for the year 1902-3 [Cd. 1935], 1904.

† Acting Governor Taylor. "Straits Settlements Report for 1902." *Colonial Reports—Annual*, No. 406. [Cd. 1768 11.] London, 1903, p. 18.

‡ Weldon.—*Yearly Report of the Government Mining Engineer for the year ending 30th June, 1904.* Pretoria, 1904. *Half-yearly Report of the Government Mining Engineer for the six months ending 31st December, 1904.* Pretoria, 1905.



## TRANSVAAL—continued.

TABLE 376.  
AVERAGE NUMBER of PERSONS EMPLOYED at MINES\* during the year ended  
31st December, 1904.

Kind of Mines.	Under-ground.			Above-ground.			Total.		
	Whites.	Coloured.	Chinese.	Whites.	Coloured.	Chinese.	Whites.	Coloured.	Chinese.
Coal ... ..	110	5,031	—	362	3,055	—	472	8,086	—
Diamond ... ..	34	632	—	237	1,666	—	271	2,298	—
Gold ... ..	5,783	46,668	3,592	7,857	25,056	1,133	13,640	71,724	4,725
Total for 1904 ... ..	5,927	52,331	3,592	8,456	29,777	1,133	14,383†	82,108†	4,725
Total for preceding year	5,054	42,289	—	7,412	25,332	—	12,466†	67,621†	--

TABLE 377.  
OUTPUT and VALUE of MINERALS during the years ended 31st December, 1903,  
and 1904.

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Tons.	Metric Tons.	£	Tons.	Metric Tons.	£
Coal ... ..	2,012,211	2,044,502	877,976	2,409,033	2,447,692	883,891
Diamonds ...	carats 174,976	kilos. 36	239,752	carats 884,330	kilos. 182	1,185,083
Gold (Fine) ...	ozs. 2,972,897	kilos. 92,467	12,628,057	ozs. 3,773,517	kilos. 117,370	16,028,883
Salt‡ ... ..	759	771	4,487	130	132	781
Silver (Fine) ...	ozs. 350,070§	kilos. 10,888	36,745	ozs. 416,262§	kilos. 12,947	45,319
Other Minerals	—	—	259,296	—	—	319,244
Total ... ..	—	—	14,046,313	—	—	18,463,201

The table below affords further information concerning the output of gold.

TABLE 378.

Source of the gold.	Quantity of fine gold.	Value at £4·24773 per oz.
	Ozs.	£
Stamp mills at the mines ... ..	2,368,781	10,061,954
Chemical processes at the mines ...	1,356,804	5,763,325
Metallurgical and chemical works ...	41,758	177,376
Tailings Syndicates and non-crushing mines.	3,879	16,477
Alluvial workings ... ..	703	2,986
Other sources ... ..	1,592	6,765 *
Total ... ..	3,773,517	16,028,883

The above figures show the importance of the chemical processes for the extraction of gold, as nearly 36 per cent. of the total quantity was obtained by chemical treatment.

\* Producing and non-producing mines.

† In addition to these persons there were about 288 whites and 2,147 coloured employed in alluvial workings and other mines and works in 1903, and 303 whites and 2717 coloured in 1904.

\* These figures relate to the output of salt for the years ended 30th June, 1903 and 1901 respectively.

§ Estimated quantity of fine silver contained in the gold bullion exported.

|| Including coke, fireclay, granite, limestone, sandstone, slate, bricks, &c.



## TRANSVAAL—continued.

TABLE 379.  
FATAL ACCIDENTS at ALL MINES and MINERAL WORKINGS during the year ended  
31st December, 1904.

Mines and Mineral Workings.	Number of persons killed.										Grand Total.	Death-rate per 1000 persons employed.
	Under-ground.			Above-ground.			Total (under and above-ground).					
	Whites.	Coloured.	Chinese.	Whites.	Coloured.	Chinese.	Whites.	Coloured.	Chinese.			
Coal ... ..	—	17	—	—	1	—	—	18	—	18	2·10	
Diamond ... ..	—	2	—	—	8	—	—	10	—	10	3·89	
Gold ... ..	42	273	14	18	42	4	60	315	18	393	4·36	
Other Mines and Mineral Workings.	*	*	—	*	*	—	2	12	—	14	4·64	
Total for 1904 ...	—	—	—	—	—	—	62	355	18	435	4·17	
Total for preceding year.	—	—	—	—	—	—	65†	293†	—	358†	4·34	

TABLE 380.  
FATAL ACCIDENTS at COAL, DIAMOND, and GOLD MINES, CLASSIFIED according  
to cause, during the year ended 31st December, 1904.

Cause of Accident.	Persons Killed.									
	Coal Mines.		Gold Mines.			Diamond Mines.		Other Mines and Mineral Workings.		
	Whites.	Coloured.	Whites.	Coloured.	Chinese.	Whites.	Coloured.	Whites.	Coloured.	
Explosives ... ..	—	2	12	52	8	—	—	—	1	
Overwinding ... ..	—	—	—	—	—	—	—	—	—	
Travelling in cage or skip	—	—	6	63	—	—	—	—	—	
Struck by cage, skip or hauling rope.	—	1	5	25	—	—	—	—	1	
Travelling by ladders ...	—	—	—	5	1	—	—	—	—	
Falling in shafts, excavations, &c.	—	1	6	24	2	—	—	—	1	
Falling of material ...	—	—	4	19	—	—	—	—	—	
Fall of ground ... ..	—	12	9	76	2	—	9	—	2	
Trucks and tramways ...	—	2	3	14	2	—	—	—	2	
Boilers and steam pipes ...	—	—	2	8	—	—	—	—	—	
Machinery ... ..	—	—	6	20	3	—	—	2	4	
Directly caused by electricity.	—	—	—	—	—	—	—	—	—	
Miscellaneous ... ..	—	—	7	9	—	—	1	—	1	
Total ... ..	—	18	60	315	18	—	10	2	12	

A serious accident, due to the breaking of a flat hauling rope, occurred on the 25th April, 1904, in No. 2 shaft of the Robinson Deep Gold Mine, by which 44 natives lost their lives. Full particulars of the accident are given in Appendix B. of Part II. of the Annual Report of the Government Mining Engineer for the year ending 30th June, 1904.†

\* Particulars not given.

† Including other mines and mineral workings.

‡ Pretoria, 1904.



TRANSVAAL—*continued.*

The following Ordinances relating to mining were passed in the year 1904 :—

Correction of Error in Laws (No. 4).

Labour Importation (No. 17).

The Government Mining Engineer states, in his report for the year ending 30th June, 1904,\* that the Special Phthisis Commission organized by the Chamber of Mines has awarded a prize and gold medal to Mr. T. J. Britten for his Atomiser, and a prize to the Leyner Drill Company for their Patent Water Drill, these two inventions being the only dust-laying appliances approved by the Commission.

As regards ventilation, considerable progress has been made in the ventilation of deep level shafts, and also in the better regulation of air currents in the more extensive mine workings along the Witwatersrand. A Ventilation Commission was appointed during the year, and arrangements have been made for regular tests and analyses of the air passing through the working mines.

During 1904 a marked improvement has taken place in the sanitary condition of the underground workings of the mines in the Transvaal. The bucket system has been introduced in nearly all the working mines, with underground police supervision to ensure its observance.

Change houses, in accordance with section xii. of the Mines and Works Regulations, have now been provided at all working mining properties, so that the miners can change and dry their clothes at the end of their shift.

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Trinidad.†

*Asphalt.*—The deposits at present worked occur at La Brea, and are of two kinds, one of them being that lying within the so-called pitch lake and the other comprising those lying outside the boundary of the latter, which are generally known as "land pitch" deposits.

The pitch lake is situated 130 feet above sea level about half a mile from the coast, and covers an area of 140 acres, the edges of which are covered with a thin soil that supports a luxuriant growth of rank grasses and scrub. The rim of the lake becomes more evident as mining operations proceed and the surface of the lake subsides at the rate of about 6 inches per 100,000 tons of pitch excavated. For all practical purposes there is no existing source of fresh supply.

All the lands between the sea and the lake on the north-west and north-east sides contain asphalt deposits of larger or smaller size, these deposits all resemble each other in many essential particulars, and differ from the asphalt of the lake, more particularly in that the asphalt of the former is harder, drier, contains less water, a greater proportion of organic matter not bitumen, and generally speaking a greater admixture of earthy and other matters.

The area of the land pitch upon which the village of La Brea was situated covers about 70 acres, and has been extensively worked.

Owing to the continual litigation between the various owners of the land deposits, a Bill is being introduced to regulate the working of the industry.

There are other deposits of asphalt in the Colony of considerable extent, which do not appear to be concentrated into hollows as at La Brea.

*Manjak* (Glance Pitch).—Deposits of this mineral are worked at Vistabella and Marbella in the neighbourhood of San Fernando. The workings have at present reached a depth of 250 feet, and the quality of this intrusive deposit appears to improve as the depth increases.

\* Pretoria, 1904.

† Information furnished by Mr. J. Cadman, Inspector of Mines for Trinidad.

*Coal.*—The Cunapo coalfield has so far been exploited by the Government, and has been proved to possess Tertiary lignites of excellent quality but very variable in extent and thickness. A few small surface excavations have been made in several localities, but practically no coal has been worked. Coal occurs in the neighbourhood of Sangre Grande, Williamsville, Caparo, Erin, Chatham, Rio Negro, Point-Noir, and Cedros.

*Petroleum.*—The oilfields are of very much greater extent than was formerly supposed. The whole of the Southern portion of the island, extending from Guayaguayare to Cedros, contains oil-bearing sands of Tertiary age. Prospecting work at Guayaguayare has been carried on an extensive scale with considerable success, and other exploration work is about to be commenced.

*Gold.*—Gold prospecting has been carried on in several localities, and a shaft has been sunk near Arima in search of this metal.

*Stone.*—Limestone is extensively worked for road-metal and lime-burning. Cretaceous grits are also quarried for road material. The principal quarries are Eastern Quarry, Port of Spain, Laventille, Pointe Gourde, Carrera, Gasperillo, St. Joseph, Point o' Pierre. San Fernando and others.

*Gypsum.*—There is a deposit of gypsum in the neighbourhood of St. Joseph which has been worked to a small extent.

TABLE 381.

NUMBER of PERSONS employed at MINES and OPEN WORKINGS during the year ending December, 1904.

Mines or Open Workings.	Underground.		Above Ground.		Total.
	Males.	Females.	Males.	Females.	
Mines (Asphalt) ... ..	70	—	31	—	101
Open workings (Asphalt) ... ..	—	—	729	52	781
„ (Limestone, &c.) ... ..	—	—	323	66	389
Total ... ..	70	—	1,083	118	1,271

TABLE 382.

QUANTITY and VALUE of MINERALS produced during the years ending December 1903 and 1904.

Mineral.	1903.			1904.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asphalt, raw ... ..	169,813	172,538	169,813	118,432	120,333	118,432
„ purified ... ..	10,045	10,206	20,090	10,887	11,062	21,774
„ dried ... ..	2,484	2,524	3,312	3,722	3,782	4,962
Manjak... ..	587	596	880	3,023	3,072	4,534
Limestone and road material	31,513	32,019	3,885	36,107	36,686	3,984
Total value ... ..	—	—	197,980	—	—	153,686

### Virgin Islands\*.

Mines containing molybdenum and copper exist in Virgin Gorda, one of the group of these islands.

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### Wei-hai-wei.†

Thirty-nine prospecting licences were renewed during 1904. The Wei-hai-wei Gold Mining Company established a crushing mill and other machinery during the year.

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### West Indies. (See BARBADOS, DOMINICA, REDONDA, and TRINIDAD.)

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\* Acting Governor Bell, "Leeward Islands, Report for 1904-5." *Colonial Reports—Annual*. No. 478 [Cd. 2684-24] 1905, p. 23.

† Lockhart.—"Wei-hai-wei, Report for 1904." *Colonial Reports—Annual*. No. 450 [Cd. 2238-27], London, 1905. p. 16.

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## FOREIGN COUNTRIES.

## Abyssinia.\*

*Coal.*—Workable lignite is said to occur at Tégullet, Debra-Libanos, and Ankober.

*Gold.*—This metal is obtained from the Wallega, Shankalla, and Benischongul districts. The precious metal exported from Addis Abbaba and Harrar annually is estimated to be worth £150,000, the amount of fine gold may be reckoned as 32,430 ozs., and of fine silver about 2,820 ozs.

*Iron Ore.*—The districts of Entoto Hamasen, Damot, Harrar, and Agomedder abound in iron ore, which is smelted locally.

*Salt.*—Mines at Arho in the Tittal country between Makallé and the Red Sea produce a large quantity of salt; the mineral is likewise obtained from Gojam. The estimated value of the salt produced in the whole of the Addis Abbaba district during the year 1899-1900 amounted to £18,700.

## Algeria.†

The three principal minerals raised in Algeria are iron ore, phosphate of lime and zinc ore. A considerable quantity of limestone is quarried, and the workings for salt are of some importance.

*Antimony Ore.*—This mineral is being worked at Hamimat.

*Copper Ore.*—A considerable amount of prospecting work for copper has been done in the Department of Oran during 1904. The output of ore shows a large increase compared with that of 1903.

*Iron Ore.*—Most of the iron ore, which is magnetite and manganiferous hæmatite, is produced by the Mokta-el-Hadid Mines near Bona and the Benisaf Mines near Tlemsen. The former produced 39,000 tons and the latter 306,000 tons in 1904.

*Marble.*—Numidian marble had won renown in the time of the Romans. The onyx marble produced by the Colony is of great beauty. One of the localities where it is found is Sidi-Hamza. Quarries at Filfila near Philippeville and at Ouled-Rahmoun in the district of Bona produce statuary marble as well as many coloured varieties. Other quarries are situated at Tekbalet and Oued Chouly in the Department of Oran.

*Petroleum.*—Work was carried on in 1903 at the petroleum wells of Ain-Zeft in the Department of Oran. The "Société des Pétroles Français" is laying down plant at St. Aimé for refining its products.

*Phosphate of Lime.*—The annual output has grown from about 5,000 tons in 1893, to 343,317 tons in 1904. The phosphate is quarried in the vicinity of Tébessa and also at Tocqueville and Bordj R'Dir in the Province of Constantine, and it is now the most important mineral product of Algeria.

*Salt.*—Nearly all the salt was produced from lakes in the Departments of Constantine and Oran.

*Zinc Ore.*—Calamine and blende are both worked and especially in the Department of Constantine.

TABLE 385.

PERSONS EMPLOYED at Mines and Quarries during the Years 1903 and 1904.

Year.	At Mines.	At Underground Quarries.	At Open Quarries.	Total.
1903	3,504	1,100	3,286	7,890
1904	3,572	1,049	5,240	9,861

\* Baird. "Report on the Trade of Addis Abbaba, and Harrar, Abyssinia." *Dipl. and Cons. Reports* No. 2531, Ann. Ser., 1899-1900 [Cd. 352-27], 1900, with map; and information furnished by the Consul-General at Addis Abbaba.

† *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1903, and pour l'année 1904*; and Hay Newton, "Report on the Trade of Algeria for the year 1903-4." *Dipl. and Cons. Reports*, No. 3479, Ann. Ser. [Cd. 2682-41]. London, 1905.

ALGERIA—continued.

TABLE 386.

QUANTITY and VALUE of the MINERALS produced from Mines during the Years 1903 and 1904.\*

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony ore ... ..	490	81,600	160	21,120
Brown coal ... ..	140	1,681	105	1,260
Copper ore ... ..	100	12,000	1,804	112,570
Iron ore ... ..	588,893	5,748,645	468,737	4,177,698
Lead ore, argentiferous ... ..	499	29,935	511	37,980
Mercury... ..	—	—	3,148	28,332
Rock salt and salt from brine ... ..	26,329	500,275	18,563	364,257
Zinc ore ... ..	43,313	3,030,609	47,192	3,932,248
Total Value in Francs ... ..	—	9,404,805	—	8,675,465
„ „ £ sterling ... ..	—	£376,192	—	£347,019

TABLE 387.

QUANTITY and VALUE of MINERALS produced from Quarries during the Years 1903 and 1904.\*

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Clay ... ..	125,800	428,125	125,410	443,312
Flags ... ..	8,370	130,000	8,000	80,000
Gypsum ... ..	300	750	350	875
Limestone ... ..	34,750	837,650	35,800	802,200
Marble ... ..	700	129,000	530	100,500
Onyx... ..	67	17,920	121	36,000
Plaster and Cement... ..	33,000	701,750	38,420	785,050
Phosphate of lime ... ..	320,843	6,416,860	343,317	6,866,340
Sand and gravel ... ..	46,720	52,920	51,020	53,320
Stone for building ... ..	740,755	1,730,214	724,300	1,684,100
„ (rough and broken) ... ..	1,078,650	1,052,400	1,096,800	1,070,550
Total Value in Francs ... ..	—	11,497,589	—	11,922,247
„ „ £ sterling ... ..	—	£459,904	—	£476,890

\* Statistique de l'Industrie Minière en France et en Algérie pour l'année 1903, and pour l'année 1904.



## ALGERIA—continued.

TABLE 388.

DEATHS from ACCIDENTS during the Years 1903 and 1904.\*

Kind of Working.	1903.		1904.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines... ..	5	1.43	4	1.12
Underground Quarries ... ..	1	.91	1	.95
Open Quarries ... ..	13	3.96	7	1.34
Total ... ..	19	2.41	12	1.22

## Annam. (See INDO-CHINA.)

## Arabia.

The Arab is not a miner by nature, and there is little or no working for minerals on the great Arabian peninsula. In days gone by, according to Burton, gold mines were worked in the land of Midian.

## Argentine Republic.†

All writers seem to agree that the mineral resources of the Argentine Republic are great; little, however, has been done to develop them, as the deposits are located in the Andes at a great elevation where fuel and water are scarce, whence transport is difficult and costly, and very high fees have to be paid for licences to prospect and work in new districts. In addition to the ores of copper, gold, iron, lead, mercury, nickel, and silver, the Republic can produce asbestos, borax, coal, nitrate of soda, petroleum, salt, and sulphur. As railways are extended to the Andes, bringing facilities for working, the mining industry is sure to progress rapidly.

Some important development work in gold mining is reported to be taking place in the northern part of the Republic on the Bolivian frontier. A number of companies have recently been formed with the object of dredging for gold, and several dredges are shortly to be ordered.

It is reported that petroleum has been found in the south of the Republic.

Large quantities of salt are obtained from the brine of a huge salt lake near San Blas, some 800 miles south of Buenos Ayres. The output at the present time is about 25,000 tons a year.‡

Unfortunately the National Department of Mines and Geology at Buenos Ayres is unable to supply any statistics. The figures in the following table (No. 389) have, therefore, no official sanction.

\* Statistique de l'Industrie Minière en France et en Algérie pour l'année 1903, and pour l'année 1904.  
† "Mineral Resources of the Argentine Republic," by James McKean Rowbotham, A.M.I.C.E. *Proc. Inst. C. E.*, Vol. CXXVIII, 1896-7, Part II.; "Official Report upon the Mines, Mining, Metallurgy and Mining Laws of the Argentine Republic," by H. D. Hoskold, published by the Ministry of Agriculture, Commerce and Industries, Buenos Ayres; Republic Argentina, *Anales del Ministerio de Agricultura, Sección Geología, Mineralogía y Minería*, Tomo I., Núm. 1; Harford "Finances of the Argentine Republic for the year 1904 and part of 1905." *Dipl. and Cons. Reports*, No. 3434, Ann. Series [Cd. 2236-178], London, 1905, p. 12; and Consul Ross, "Trade of Consular District of Buenos Ayres for the year 1904." *Dipl. and Cons. Reports*, No. 3347, Ann. Series [Cd. 2236-91], 1905.  
‡ Consul Ross, "Trade of Consular District of Buenos Ayres for the years 1901 and 1902." *Dipl. and Cons. Reports*, No. 2,767, Ann. Series [Cd. 786-71], p. 8, and No. 2961 [Cd. 1336-38].



ARGENTINE REPUBLIC—continued.

TABLE 389.

QUANTITY and VALUE of COPPER produced during the Years 1903 and 1904, and of GOLD and SILVER during the YEAR 1903.

Metal.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
Copper (fine) ...	Metric Tons. 137*	£ 7,830†	Metric Tons. 157*	£ 9,103†
Gold ... ..	Kilos. 45‡	6,160	§	—
Silver ... ..	Kilos. 2,880‡	10,267	§	—

Aruba. (See DUTCH WEST INDIES.)

Austria-Hungary.||

As the Governments of Austria and Hungary publish separate official statistics, it has been thought advisable to maintain the distinction in the tables which follow. Further, it is convenient to refer to Bosnia and Herzegovina in this place, as these countries are administered by the common Ministry of Finance of Austria-Hungary, though not incorporated with the Empire.

*Brown Coal.* ¶—Most of the provinces of Austria proper yield brown coal, but Bohemia is by far the largest producer, with an output in 1904 of 18,140,428 tons. The principal workings for brown coal are in the Taplitz basin, where the seams often reach a thickness of 98½ feet (30 m.). These are of Lower Miocene age, and there are likewise seams of 3 feet thick of Upper Oligocene age which are worth working.

Styria, next in importance after Bohemia, produced over 2½ million tons of brown coal in 1904. The deposits are of Miocene age. Seams 50 feet to 100 feet in thickness (16 m. to 30 m.) are not uncommon, and in one place a seam is nearly 200 feet (60 m.) thick.

The principal brown coal mines in Hungary are situated in the counties of Nógrád, Borsod, and Hunyad, though there is a considerable output from the counties of Esztergom, Komárom and Sopron.

*Coal.* ¶—Austria proper has two great sources of coal supply: (a) Part of the great Moravian-Silesian-Polish basin, which it shares with Prussia and Russia; (b) North-Eastern Bohemia.

\* Return compiled by Henry R. Merton and Co., Ltd., London.

† Value of foreign copper in London market.

‡ Taken from the Report of the Director of the United States Mint for the fiscal year ending 30th June, 1904, p. 142.

§ Not obtainable.

¶ *Statistisches Jahrbuch des K. K. Ackerbau-Ministeriums* for 1903, Vienna, Part II., No. 1; *Magyar Statisztikai Évkönyv*, New Series, X. for 1902, Budapest, 1904; and information furnished by the Central Statistical Office of the Kingdom of Hungary.

¶ *Die Mineralkohlen Oesterreichs*, Vienna, 1903.

## AUSTRIA-HUNGARY—continued.

(a.) The provinces of Moravia, Silesia, and Galicia furnished nearly 64 per cent. of all the coal of Austria proper in 1904; the coal mining industry is most largely developed in the Ostrau-Karwin district of Silesia, where there are 25 workable coal seams making up a total thickness of 72 feet (22 m.) of coal. Some of it is made into excellent coke.

(b.) In 1904 Bohemia supplied nearly 36 per cent. of all the coal of Austria proper. The main seam of the Kladno-Rakonitz basin is 20 feet to 36 feet thick.

Though the deposits are of comparatively little importance commercially, it is interesting from a geological point of view to note the fact that true coal is being worked in Austria in several of the subdivisions of the secondary rocks. Thus in Lower Austria coal is obtained from seams of Triassic, Liassic, and Upper Cretaceous age, and a coal of Cretaceous age is being mined in North-Western Moravia.

The principal coal regions of Hungary are in the counties Krassó-Szörény and Baranya.

*Gold.*—The bulk of the gold comes from mines in Hungary, and especially from the mineral region of Zalatna and from the neighbourhood of Nagybánya in the county of Szatmár. Most of the gold ore raised in Austria in 1904 was obtained from Mount Roudny mine near Beneshaw, in Bohemia.\*

*Iron Ore.*—Austria on the contrary is the chief producer of iron. Among the Austrian provinces, Styria retains the first place with about 53 per cent. of the output, next comes Bohemia with 44 per cent. As regards Hungary the ores of this metal are worked in very many parts of the Kingdom, especially in the northern counties of Gömör and Szepes, and in the south-eastern counties of Krassó-Szörény and Hunyad.

*Lead Ore.*—Nearly 64 per cent. of the Austrian lead ore raised in 1904 came from Carinthia, and 31 per cent. from Galicia.

*Mercury.*—The famous quicksilver mine at Idria in Carniola has now been worked for upwards of five centuries; since 1580 it has belonged to the State. A little mercury is obtained from Hungary, and the metal has also been discovered in Dalmatia.†

*Opal.*—The celebrated opal mines of Hungary are situated at Dubnik in the county of Sáros; they are worked by the State. The annual output is 10 to 12,000 carats.

*Ozokerite and Petroleum.*—Galicia is remarkable for two important products, mineral wax and mineral oil. The principal workings for the former are at Boryslaw in the Drohobycz district, which likewise has the most productive oil-wells.

*Salt.*—Both in Austria and in Hungary the salt trade is a Government monopoly. Rock salt is obtained at Wieliczka and Bochnia in Galicia, and especially in the counties of Máramaros, Alsó-Fehér and Szolnok-Doboka in Hungary and in Transylvania; saliferous marl is treated by the lixiviation process in the Austrian Alps. On the shores of the Adriatic salt is extracted by solar evaporation from sea water.

*Silver.*—Bohemia and Hungary both produce silver. The Przibram mines in the former country have long been celebrated, not only as large producers of silver and lead, but also on account of their great depth.

\* Consul Wentworth Forbes, "Trade of Bohemia for the year 1904." *Dipl. and Cons. Reports*, No. 3486, Ann. Ser. 1905 [Cd. 2682-11], p. 6.

† Churchill, "Report on the Trade and Commerce of Trieste for the year 1901." *Dipl. and Cons. Reports*, No. 2762, Ann. Ser., London, 1902, p. 12.

## AUSTRIA.

TABLE 390.

PERSONS EMPLOYED at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, arranged according to PROVINCE in which Employed, during the Years 1903\* and 1904.†

Province.						Persons Employed.			
						1903.		1904.	
						Total.	Percentage of the Total Number.	Total.	Percentage of the Total Number.
Austria, Lower	...	...	...	...	...	777	0.56	601	0.44
„ Upper	...	...	...	...	...	1,616	1.16	1,587	1.17
Bohemia	...	...	...	...	...	64,743	46.62	62,416	46.04
Bukowina	...	...	...	...	...	206	0.15	227	0.17
Carinthia	...	...	...	...	...	3,989	2.87	3,751	2.77
Carniola	...	...	...	...	...	2,310	1.67	2,284	1.68
Dalmatia	...	...	...	...	...	793	0.57	739	0.54
Galicia	...	...	...	...	...	4,988	3.59	5,362	3.96
Görnz and Gradisca	...	...	...	...	...	—	—	21	0.02
Istria	...	...	...	...	...	1,083	0.78	984	0.73
Moravia	...	...	...	...	...	11,752	8.46	11,769	8.68
Salzburg	...	...	...	...	...	536	0.39	505	0.37
Silesia	...	...	...	...	...	29,015	20.89	29,019	21.41
Styria	...	...	...	...	...	15,987	11.51	15,262	11.26
Tirol	...	...	...	...	...	1,086	0.78	1,037	0.76
Vorarlberg	...	...	...	...	...	1	0.00	—	—
Total	...	...	...	...	...	138,882	100.00	135,564	100.00

TABLE 391.

PERSONS EMPLOYED at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1903 and 1904.†

Year.	No. of Mines.	Coal.					No. of Mines.	Brown Coal.					No. of Mines.	Iron Ore.				
		Persons Employed.						Persons Employed.						Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	
1903	141	59,898	2,611	4,353	1	66,863	242	51,469	2,441	1,152	3	55,065	37	4,619	101	220	—	
1904	146	59,893	2,618	3,996	—	66,507	228	49,268	2,397	1,066	1	52,732	35	3,980	85	184	—	

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1903, Vienna, Part II., No. 2, p. 164.

† Do. do. do. 1904, do. p. 143.

† Do. do. do. do. do. pp. 144-147.



AUSTRIA—continued.

LE 391—continued.

No. of Mines.	Other Mines.						All the Mines.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	General Total.
...	88	10,610	810	772	22	12,214	508	126,396	5,963	6,497	28	138,882
...	89	10,587	794	687	8	12,076	496	123,728	5,894	5,933	9	135,564

TABLE 392.

PERSONS EMPLOYED at SALT MINES and WORKS during the Years 1903 and 1904.\*

Country or Province.	Salt Mines.			Brine Evaporating Works and Sea Salt Works.					Total at Salt Mines and Works.				
	Men.	Young Persons.	Total.	Men.	Women.	Young Persons.	Children.	Total.	Men.	Women.	Young Persons.	Children.	Total.
Austria ..	413	1	414	908	13	2	—	923	1,321	13	3	—	1,337
.. ..	192	1	193	177	3	—	—	180	369	3	1	—	373
.. ..	43	—	43	53	—	—	—	53	96	—	—	—	96
.. ..	138	—	138	368	6	—	—	374	506	6	—	—	512
.. ..	118	—	118	125	—	—	—	125	243	—	—	—	243
.. ..	—	—	—	521	322	108	—	951	521	322	108	—	951
.. ..	—	—	—	555	522	13	—	1,090	555	522	13	—	1,090
.. ..	1,456	—	1,456	682	—	—	—	682	2,638	—	—	—	2,638
For 1904 ..	2,960	2	2,962	3,389	866	123	—	4,378	6,249	866	125	—	7,240
For 1903 ..	2,741	2	2,743	3,425	703	238	607	4,973	6,166	703	240	607	7,716

TABLE 393.

PERSONS EMPLOYED at OZOKERITE MINES and PETROLEUM WELLS during the Years 1903 and 1904.†

No.	Kind of Workings.	1903.				1904.			
		Persons Employed.				Persons Employed.			
		Men.	Women.	Young Persons.	Total.	Men.	Women.	Young Persons.	Total.
...	Ozokerite ...	2,933	58	15	3,006	2,929	45	20	2,994
...	Petroleum ...	5,099	5	3	5,107	6,228	27	16	6,271

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1904, Vienna, Part II., No. 2, p. 156.  
† Do. do. do. do. do. No. 2, pp. 339 and 340.

AUSTRIA—continued.

TABLE 394.

QUANTITY and VALUE of MINERALS produced from MINES, exclusive of SALT, OZOKERITE, and PETROLEUM, during the Years 1903 and 1904.\*

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum shale and vitriol ore ...	2,978	23,826	2,337	18,698
Antimony ore ... ..	41	3,005	103	8,666
Asphalt ... ..	1,273	54,000	1,434	69,466
Bismuth ore ... ..	14	18,353§	2	3,456
Brown coal ... ..	22,157,521	100,380,387	21,987,651	96,796,467
Coal ... ..	11,498,111	97,435,374	11,868,245	95,485,941
Copper ore... ..	12,688	530,869	16,201	705,729
Gold ore† ... ..	2,148	106,779§	12,653	293,622
Graphite ... ..	29,589	1,882,503	28,620	1,901,883
Iron ore ... ..	1,715,984	14,766,560	1,719,219	15,095,192
Lead ore ... ..	22,196	3,263,179	22,513	3,085,285
Manganese ore ... ..	6,179	128,851	10,189	173,186
Quicksilver ore ... ..	83,321	2,209,188	88,278	2,235,392
Silver ore† ... ..	21,958	2,871,309	21,948	3,021,046
Sulphur ore ... ..	4,475	102,979	6,288	133,913
Tin ore ... ..	57	9,105	76	9,983
Tungsten ore ... ..	49	66,630§	52	77,915
Uranium ore ... ..	45	85,118	17	204,842
Zinc ore ... ..	29,544	1,878,610	29,226	2,112,745
Total value in crowns ...	—	225,816,625§	—	221,433,427
„ „ £ sterling ...	—	£9,401,192§	—	£9,218,711

TABLE 395.

QUANTITY and VALUE of SALT produced during the Years 1903 and 1904.||

Province.	Rock Salt.	Salt from Brine.	Sea Salt.	Industrial Salt.	Value reckoned according to the Monopoly Prices.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Crowns.
Upper Austria ... ..	265	74,736	—	5,033	14,950,509
Salzburg ... ..	6	14,322	—	6,699	2,817,989
Bukowina ... ..	1,170	4,479	—	380	1,026,928
Styria... ..	4,738	15,920	—	5,359	4,118,738
Tyrol ... ..	22	15,085	—	3,046	2,073,792
Dalmatia ... ..	—	—	10,690	—	1,043,310
Istria ... ..	—	—	40,428	—	6,081,419
Galicia ... ..	32,343	49,399	—	85,755	19,997,475
Total for 1904 ...	38,544	173,941	51,118	106,272	52,110,160
„ 1903 ...	32,159	177,854	33,209	115,792	£2,169,449 47,362,118 £1,971,778

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1904, Vienna, Part II., No. 1.  
† 8 kilos of fine gold were obtained at the Metallurgical Works in 1903, and 71 kilos. in 1904.  
‡ 39,812 kilcs. of fine silver were obtained at the Metallurgical Works in 1903, and 39,032 kilos. in 1904.  
§ Corrected figures.  
|| Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1903, Vienna, Part II., No. 1, pp. 206 and 207.

QUANTITY and VALUE of OZOKERITE and PETROLEUM produced during the Years 1903 and 1904.\*

Provinces.	Mineral.	1903.		1904.	
		Quantity.	Value.	Quantity.	Value.
Galicja ...	Ozokerite ...	Metric Tons. 2,849	Crowns. 4,350,193	Metric Tons. 3,086	Crowns. 4,730,554
" ...	Petroleum ...	672,508	17,101,312	823,943	21,405,822
	Total value in crowns	—	21,451,505	—	29,136,376
	" £ sterling	—	£893,068	—	£1,213,005

TABLE 397.

ACCIDENTS at MINES, exclusive of OZOKERITE MINES and PETROLEUM WELLS, during the Years 1903 and 1904.†

Kind of Mines.	1904.			
	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
Coal (bituminous) ...	61	509	0·92	194,561
Brown coal ...	49	866	0·93	448,728
Iron ore ...	6	23	1·41	286,536
Salt ...	—	19	—	—
Other mines (excluding ozokerite mines, and petroleum wells).	6	82	0·50	39,990
Total for 1904 ...	122	1,499	0·85	296,179
" preceding year ...	114	1,228	0·80	312,459

TABLE 398.

ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS during the Years 1903 and 1904.‡

Kind of Workings.	1903.			1904.		
	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.	Death.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.
Ozokerite ...	1	20	0·33	2	14	0·67
Petroleum ...	5	55	0·98	4	74	0·64

The accidents have been classified according to mineral worked, place, and cause.

\* *Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1904*, Vienna, Part II., No. 2, pp. 339 and 340.  
† Do. do. do. do. do. pp. 245, 255 and 263.  
‡ Do. do. do. do. do. pp. 353 and 356.



AUSTRIA—continued.

TABLE 399.

DEATHS classified according to the MINERAL worked, and the PLACE of the ACCIDENT, during the Years 1903 and 1904.\*

Place of Accident.	Coal.	Brown Coal.	Iron Ore.	Rock Salt.	Other Minerals.	Total.
In perpendicular shafts ...	7	4	—	—	—	11
On inclined planes ... ..	7	2	1	—	1	11
In levels ... ..	14	10	2	—	1	27
At the working face ... ..	27	24	—	—	3	54
Above ground ... ..	6	9	3	—	1	19
Total for 1904 ... ..	61	49	6	—	6	122
„ preceding year ...	49	54	2	3	6	114

TABLE 400.

PERCENTAGES of DEATHS, arranged according to MINERAL worked and PLACE where the ACCIDENT happened, during the Years 1903 and 1904.†

Kind of Mines.	Percentage of Deaths.					
	Perpendicular Shafts.	Inclined Planes.	Levels.	At the Working Face.	Above-ground.	Total.
Coal ... ..	5·74	5·74	11·47	22·13	4·92	50·00
Brown coal ...	3·28	1·64	8·20	19·67	7·37	40·16
Iron ... ..	—	0·82	1·64	—	2·46	4·92
Rock salt ...	—	—	—	—	—	—
Other mines ...	—	0·82	0·82	2·46	0·82	4·92
Total for 1904 ...	9·02	9·02	22·13	44·26	15·57	100·00
„ preceding year	9·65	8·77	17·55	52·63	11·40	100·00

\* Statistisches Jahrbuch des k. k. Ackerbau Ministeriums for 1904, Vienna, Part II., No. 2, pp. 251-255.  
† Do. do. do. do. do. p. 246.

AUSTRIA—continued.

TABLE 401.

DEATHS classified according to CAUSE of ACCIDENT in MINES (exclusive of WORKINGS for OZOKERITE and PETROLEUM) during the Years 1903 and 1904.\*

Cause of Accident.	Number of Persons killed.		Increase or Decrease.
	1903.	1904.	
By falls of roof ... ..	56	40	— 16
„ haulage or winding appliances ... ..	17	22	+ 5
„ stones or things falling down ... ..	5	23	+ 18
„ machines or tools ... ..	7	3	— 4
„ falling down ... ..	7	8	+ 1
„ firedamp explosions ... ..	4	3	— 1
„ ignitions of inflammable gas ... ..	—	—	=
„ suffocation ... ..	—	2	+ 2
„ coal, stone, &c., falling or sliding down above ground.	2	3	+ 1
„ travelling in cage or climbing ladders ... ..	—	1	+ 1
„ blasting ... ..	7	3	— 4
While undercutting (holing) .. ..	1	5	+ 4
„ timbering or walling ... ..	1	2	+ 1
By irruption of water ... ..	—	—	=
„ electric current ... ..	1	1	=
„ other causes ... ..	6	6	=
Total ... ..	114	122	+ 8

The preceding tables show that in the mines of Austria proper (exclusive of workings for ozokerite and petroleum) there were 122 deaths from accidents, or 8 more than in 1903. The accidents at the ozokerite and petroleum workings are given in the following table :—

TABLE 402.

NUMBER of DEATHS and of PERSONS seriously injured by ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS, classified according to the PLACE where the ACCIDENT happened, during the Year 1904, and total for the preceding year.†

Place of Accident.	Number of Deaths from Accidents.	Number of Persons seriously injured.
In vertical shafts ... ..	2	3
In sinks and rises ... ..	—	—
In levels ... ..	—	6
At the working face ... ..	—	—
On surface ... ..	4	79
Total for 1904 ... ..	6	88
„ preceding year	6	75

\* Statistisches Jahrbuch des k. k. Acherbau-Ministeriums for 1904, Vienna, Part II., No. 2, p. 247.

† Do. do. do. do. do. pp. 353-356.

AUSTRIA—continued.

Table 401 shows a decrease of 16 in the number of deaths from falls of roof during the year.

In the year 1904 there were 7 explosions of firedamp in mines and other mineral workings in Austria, causing the death of 4 persons and serious injuries to 16. Of these 7 explosions, 1 happened in a coal mine, 3 in brown coal mines, 1 in a lead and zinc mine, and 2 at petroleum wells.

TABLE 403.

Separate EXPLOSIONS of FIREDAMP or COAL DUST, arranged according to kind of MINES or other MINERAL WORKINGS, and cause of ACCIDENT during the Year 1904.\*

Cause.	Coal.	Brown Coal.	Lead and Zinc.	Ozokerite Mines and Petroleum Wells.	Total.
1. Naked lights ... ..	1	3	—	—	4
2. Electric sparks ... ..	—	—	1	1	2
3. Friction sparks at borehole ...	—	—	—	1	1
	1	3	1	2	7

BOHEMIA.

As Bohemia employs such a large proportion of the miners in Austria, details concerning this province have been extracted from the official reports.

TABLE 404.

PERSONS EMPLOYED at the various classes of MINES in BOHEMIA during the Years 1903 and 1904.†

Kind of Mines.	Men.	Women.	Young Persons.	Children.	Total.	Percentage of Total Number of Persons Employed.
Coal ... ..	19,569	846	1,363	—	21,778	34·89
Brown coal ... ..	32,017	1,222	502	—	33,741	54·06
Iron ore ... ..	1,388	—	9	—	1,397	2·24
Other minerals ... ..	5,195	96	206	3	5,500	8·81
Total for 1904 ... ..	58,169	2,164	2,080	3	62,416	100·00
.. preceding year	60,080	2,191	2,471	1	64,743	100·00

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1904, Vienna, Part II., No. 2, p. 365.  
† Do. do. do. do. do. p. 122.



HUNGARY—continued.

TABLE 407—continued.

QUANTITY and VALUE of MINERALS and METALS produced in 1903 and 1904—continued.

Mineral, Metal, or Product.	1903.		1904	
	Quantity.	Value. Unit=1,000 Ors.	Quantity.	Value. Unit=1,000 Ovs.
	Metric Tons.		Metric Tons.	
Brown coal ... ..	5,271,781	35,715·8	5,519,349	37,822·7
Coal ... ..	1,233,410	13,213·3	1,155,320	11,886·3
Copper ore ... ..	702	80·1	747	94·0
Gold ore (washed) .. ..	5,483*	955·6	5,622†	912·8
Iron ore ... ..	1,439,132	7,728·2	1,524,036	7,913·6
Iron pyrites ... ..	96,619	761·9	97,148	817·8
Iron vitriol ... ..	982	16·7	1,277	23·8
Lead ore... ..	3,698	604·1	3,922	619·5
Manganese ore ... ..	5,311	45·6	11,527	123·9
Petroleum ... ..	3,010	142·7	2,134	111·2
Salt ... ..	212,586‡	32,346·0	226,876†	32,508·0
Silver ore ... ..	50*	9·2	445	31·8
Sulphur ... ..	135	18·8	143	21·7
Total value in Crowns ... ..	—	95,675·4	—	97,173·6
„ „ £ sterling ... ..	—	£3,986,475	—	£4,048,900

TABLE 408.

DEATHS at all MINES (including SALT MINES and SMELTING WORKS) during the Years 1903§ and 1904.||

Year.	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.
1903 ... ..	96	274	1·36
1904 ... ..	112	312	1·53
Comparison between 1903 and 1904	+16	+38	+0·17

\* 3,376 kilos. of fine gold and 19,231 kilos. of fine silver were obtained at the Metallurgical Works in 1903  
† These figures represent the quantity sold during the year by the royal monopole, and include salt imported for consumption The production in 1904 was 187,620 metric tons.  
‡ 3,669 kilos. of fine gold and 16,352 kilos. of fine silver were obtained at the Metallurgical Works in 1904.  
§ Official Return furnished by the Central Statistical Office, Budapest, and taken from the *Magyar Statisztikai Évkönyv*, New Series XI., 1903, Budapest.  
|| Official Return furnished by the Central Statistical Office, Budapest, and taken from the *Magyar Statisztikai Évkönyv*, New Series XII., 1904.

## BOSNIA AND HERZEGOVINA.\*

Brown coal, copper ore, iron ore, manganese ore, and salt are the chief mineral products. Other minerals known to exist are the ores of antimony, arsenic, chromium (which is being worked), gold, lead, quicksilver, and zinc; besides asbestos, asphalt, magnesite, and petroleum.

*Brown Coal.*—The principal collieries are at Zenica, Kreka, and Kakanj-Doboj; they are worked by the State. The most important seams at the two first named collieries are respectively 33 feet (10 metres) and 52½ feet (16 metres) thick. The coal is of Tertiary age. Coal-mining is a recent industry, for it only started in 1880, in which year 500 tons were raised; in 1904 the total output had risen to 483,617 tons, of which Zenica colliery produced 161,010 tons, Kreka colliery 240,695 tons, and Kakanj-Doboj colliery 68,818 tons. Some is exported to towns on the Adriatic.

*Chromic Iron.*—A large Viennese company has chromium mines at Dubostica.

*Copper Ore.*—The ores of this metal are mined and smelted at Sinjako.

*Iron Ore.*—The ironworks at Varèš under Government auspices are very successful, and the country's output of iron ore in 1904 was 137,540 metric tons.

*Salt.*—The extraction of salt from natural brine springs dates back, at least, to Roman times, and probably very much further. As in the Austro-Hungarian Empire, the industry is a State monopoly. Numerous borings have proved that the deposits near Dolnja Tuzla are capable of yielding an ample supply of brine in the future, to say nothing of rock salt. Of the 1,674,839 hectolitres of brine obtained from the salt springs at Dolnja Tuzla, 1,037,095 hectolitres were piped 6 miles to Lukavac in the year 1904, and there made into soda by the ammonia process, and 637,744 hectolitres to the salt works, from which 18,021 metric tons of table salt were produced.

TABLE 409.

PERSONS EMPLOYED at MINES and SALT WORKS during the Years 1903 and 1904.

Year.	Coal Mines.	Iron Mines.	Other Mines.	Salt Works.	Total.
1903 ... ..	1,682	339	392	195	2,608
1904 ... ..	1,371	344	330	243	2,288

TABLE 410.

QUANTITY and VALUE of MINERAL produced during the Years 1903 and 1904.

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Brown coal ... ..	467,962	2,095,522	483,617	2,146,044
Chrome ore ... ..	147	7,355	278	18,952
Copper ore ... ..	1,672†	29,264	640‡	28,800

\* Official Return furnished by the "Bosn.-herc., Montanbureau," and published in the *Oesterreichische Zeitschrift für Berg- und Hüttenwesen*, LIII. Jahrgang, 1905.

† 600 tons of this quantity were Fahlors.

‡ All this quantity was Fahlors.

## BOSNIA AND HERZEGOVINA—continued.

TABLE 410—continued.

QUANTITY and VALUE of MINERAL produced during the Years 1903 and 1904—continued.

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Iron ore ... ..	114,059	479,955	137,540	567,587
Iron pyrites ... ..	6,588	131,770	10,421	208,411
Manganese ore ... ..	4,537	117,972	1,114	33,430
Salt (Brine) ... (hectolitres)	1,510,438	120,835	1,674,839*	131,476
Total value in Crowns	—	2,982,673	—	3,134,693
Total value in £ sterling	—	£124,175	—	£130,504

TABLE 411.

DEATHS at MINES during the Years 1903 and 1904.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
Brown coal...	3	—	3	—	—	—	3	2.19
Iron ... ..	1	—	1	—	—	—	1	2.91
Other ... ..	—	—	—	—	—	—	—	—
Total for 1904.	4	—	4	—	—	—	4	1.96
Total for preceding year.	1	—	1	—	—	—	1	.41

Banca and Billiton. (See DUTCH EAST INDIES.)

Bavaria. (See GERMAN EMPIRE.)

\* 637,744 hectolitres of this quantity were used in the production of 18,021 metric tons of salt.



## Belgium.

Coal mining is the most important mineral industry in Belgium ; the ore mines are of little note, but the quarries of various kinds of stone have an output of considerable value.

*Coal.*—There are five coal-mining regions known respectively as the Couchant de Mons, Centre, Charleroi, Namur, and Liège. Of these the Charleroi region is the most productive, for it yields more than one-third of all the coal of Belgium.

The total output of coal in 1904 was 22,761,430 metric tons ; this amount shows a decrease of 1,035,250 tons, or more than 4 per cent. on that of the previous year.

Important discoveries of coal have been made by borings to the North and North East of Hasselt,\* and it has been already ascertained that the new basin extends over an area of some 400 square miles ; it is hoped that it will continue as far to the West as Antwerp. Numerous borings have proved a total thickness of 33 feet (10 metres) of coal.

There are 41 coking plants at work, which produced 2,211,820 tons of coke, besides 47 factories which produced 1,735,480 tons of briquettes.

The workings for mineral in Belgium are classified in the official statistics under three heads : (1) Coal Mines ; (2) Ore Mines ; (3) Quarries.

TABLE 412.

## PERSONS EMPLOYED.†

Kind of Workings.	1903.			1904.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal Mines ... ..	102,064	37,528	139,592	100,476	38,091	138,567
Ore Mines... ..	408	535	943	288	540	828
Quarries (Open and Under-ground) ... ..	—	—	37,117	—	—	37,913
Total ... ..	—	—	177,652	—	—	177,308

\* Lambert. *Le Grand bassin houiller et les nouvelles richesses minérales du Nord de la Belgique et du Sud de la Hollande*. Brussels, 1902; Stainier. "Etudes sur le bassin houiller du Nord de la Belgique." *Bull. Soc. Belge de Géologie*. Brussels, Vol. XVI., 1902, p. 77 and "Etat des Recherches dans le bassin houiller de la Campine," *Soc. Belge de Géologie*, 16 December, 1902; and Harzé. "Le bassin houiller du Nord de la Belgique." *Soc. Belge des Ingénieurs et des Industriels*, 1902.

† *Statistique des Industries Extractives et Métallurgiques et des Appareils à Vapeur en Belgique pour l'année 1903 and l'année 1904* published in the *Annales des Mines de Belgique*, Vol. X. Brussels.

## BELGIUM—continued.

TABLE 413.

PERSONS EMPLOYED at COAL MINES during the Years 1903 and 1904.\*

Year.	Under-ground.							Above-ground.							Total Under-ground and Above-ground
	Males.			Females.			Total.	Males.			Females.			Total.	
	Ages.			Ages.				Ages.			Ages.				
	12 to 14.	14 to 16.	Above 16.	14 to 16.	16 to 21.	Above 21.		12 to 14.	14 to 16.	Above 16.	12 to 16.	16 to 21.	Above 21.		
1903 ...	2,391	4,585	95,083	—	—	55	102,064	1,540	1,533	26,682	2,709	8,596	1,468	37,528	139,592
1904 ...	2,475	4,690	98,275	—	—	36	100,476	1,556	1,643	27,087	2,761	8,612	1,482	38,091	138,567

The average output per underground worker was only 227 metric tons in the year 1904, compared with 358 metric tons in this country; the reason of this is the small size of the seams, which on an average are only 2 feet 2-7 inches (68 c.m.) thick.

It is evident from Table 414 that within the next year or two female labour below-ground will cease in Belgium. Thirty years ago, from 8,000 to 9,000 girls and women were employed in the Belgian Collieries below-ground.†

TABLE 414.

FEMALES employed BELOW-GROUND at MINES in the Years 1891-1904.

Year.	Under 16 Years.	16 to 21 Years.	Above 21 Years.	Total.
1891 ... ..	683	2,285	723	3,691
1892 ... ..	219	1,957	719	2,895
1893 ... ..	44	1,505	623	2,172
1894 ... ..	—	1,076	542	1,618
1895 ... ..	—	673	595	1,268
1896 ... ..	—	291	597	888
1897 ... ..	—	87	549	636
1898 ... ..	—	19	405	424
1899 ... ..	—	—	289	289
1900 ... ..	—	—	191	191
1901 ... ..	—	—	120	120
1902 ... ..	—	—	84	84
1903 .. ...	—	—	55	55
1904 ... ..	—	—	36	36

\* *Statistique des Industries Extractives et Métallurgiques et des Appareils à Vapeur en Belgique pour l'année 1904.*  
† Harzé. *Annales des Mines de Belgique*, Vol. VI., Brussels 1901, pp. 603-605.

## BELGIUM—continued.

TABLE 416.

QUANTITY and VALUE of MINERALS produced from MINES and QUARRIES\* during the Years 1903 and 1904.†

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
Barytes ... .. <i>Metric Tons</i>	21,000	Francs. 147,000	60,000	Francs. 225,000
Chalk ... .. <i>Cubic Metres</i>	501,920	629,700	450,400	599,420
China clay ... .. <i>Metric Tons</i>	1,750	16,750	2,375	21,350
Clay (other than } China Clay). } "	292,855	1,826,450	366,135	2,427,170
Coal ... .. "	23,796,680	309,002,800	22,761,430	286,648,150
Flint (for earthen- } ware, &c.). } <i>Cubic Metres</i>	16,350	123,800	20,950	126,500
Iron ore ... .. <i>Metric Tons</i>	184,400	865,450	206,730	897,600
Lead ore... .. "	90	7,650	91	7,910
Lime ... .. <i>Cubic Metres</i>	1,580,330	10,269,300	1,645,655	10,855,190
Manganese ore ... .. "	6,100	76,000	485	4,400
Ochre ... .. <i>Metric Tons</i>	200	4,000	450	8,250
Phosphate of lime ... .. "	184,120	1,721,500	202,480	1,307,060
Phosphatic chalk ... <i>Cubic Metres</i>	350,250	1,526,200	311,640	1,297,400
Pyrites ... .. <i>Metric Tons</i>	720	3,250	1,075	10,750
Quartz (for earthenware) .. "	2,000	8,000	4,500	18,000
Sand ... .. <i>Cubic Metres</i>	724,495	1,274,750	807,715	1,257,045
Slate ... .. } " <i>Number</i>	38,953,000	1,466,350	41,240,000	1,585,100
Stone, &c. :— } Buildingstonedressed <i>Cubic Metres</i>	9,505	35,500	10,635	38,000
Dolomite ... .. "	282,223	17,586,250	259,377	20,406,060
Flags ... .. <i>Square Metres</i>	43,600	57,400	48,600	101,250
Gravel and broken } stone. } <i>Cubic Metres</i>	107,660	644,900	60,995	445,185
Hone stones and } scythe stones. } <i>Number</i>	8,935	20,700	12,500	56,150
Limestone ... .. } " <i>Metric Tons</i>	134,620	79,850	135,700	92,750
Marble ... .. "	—	—	100	1,500
Paving stone... .. <i>Number</i>	210,250	376,900	213,320	460,950
Rough and broken } stone. } <i>Cubic Metres</i>	16,735	2,683,700	17,740	2,905,650
Zinc ore... .. <i>Metric Tons</i>	111,318,000	12,065,900	117,412,000	12,780,020
Total value in Francs ... ..	2,758,010	6,135,700	3,054,265	7,052,350
" " £ sterling ... ..	3,630	242,200	3,702	229,140
	—	368,897,950	—	351,865,300
	—	14,755,918	—	14,074,612

\* Excluding the two Flanders and the Province of Antwerp which only furnish Tertiary clays for making bricks and tiles, and sand used in making glass and for other purposes.

† *Statistique des Industries Extractives et Métallurgiques et des Appareils à Vapeur en Belgique pour l'année 1903 et l'année 1904*, and published in the *Annales des Mines de Belgique*, vol. x., Brussels.



## BOLIVIA—continued.

radiating from Mount Sorata. Veins of auriferous quartz are being worked with profit in the Araca Mountain, over against Illimani.

*Silver.*—Silver mining, which in former years was the chief industry, has greatly decreased of late, partly owing to the fall in value of silver in the European markets, and partly to the mines being more or less worked out. The Huanchaca mines are still in a flourishing condition.

*Tin Ore.*—\*There are four tin-producing districts in Bolivia, viz., La Paz, Oruro Potosi, and Chorolque; the ore is obtained chiefly from veins. The total quantity of tin ore exported from Bolivia during the year 1904 was 20,356 statute tons, valued at £1,275,944, and the production of the mines in the Oruro district is stated to have amounted to 8,000 tons of metallic tin.

TABLE 418.

QUANTITY and VALUE of MINERALS produced and exported through the Port of Antofagasta during the Years 1903 and 1904.†

Description of Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Dollars.	Metric Tons.	Dollars.
Antimony ore ... ..	45	11,400		
Bismuth ... ..	113	321,976		
Borate of calcium ... ..	1,206	169,629		
Cobalt ore ... ..	—	—		
Copper, ingots ... ..	244	147,740		
" precipitate ... ..	—	—		
" matte ... ..	16	27,423		
" ore ... ..	1,745	214,825		
" and silver matte ... ..	3	3,435		
Gold ... ..	Kilos. 4.7	8,333		
Lead, silver ... ..	—	—		
" " ore... ..	—	—		
Silver ... ..	Kilos. 92	1,800		
" ingots ... ..	" 2,032	92,010		
" ore ... ..	38,872	5,651,678		
" sulphide... ..	189	1,986,246		
" and copper ore ... ..	42	25,408		
Tin, ingots ... ..	18,417	16,958,892		
" ore ... ..	8	4,800		
Wolfram ... ..	68	48,566		
Zinc ore... ..	27,480	2,101,800		
Other minerals... ..	—	6,200		
Total value in Dollars ... ..	—	27,782,161		
" " £ sterling ... ..	—	£2,083,662		

In addition to the above, the following Bolivian mineral produce was exported through the Port of Mollendo in Peru‡ during the year 1903 :—Copper, 3,767 tons, £176,540 value; Copper ore, 51 tons, £560 value; Gold £3,440 value; Tin, 444 tons, £14,850 value. In 1904, 5,551 tons of copper ore, including 3,972 tons of copper barilla from the Corocoro mines, were exported through the above-named port.

## Bonaire. (See DUTCH WEST INDIES.)

\* Pasley, "The Tin Mines of Bolivia." *Trans. Inst. M. and M.*, vol. vii., 1898-99, p. 77. Roberts, "Chorolque Tin Mines and Alluvial Deposits, Bolivia," *Ibidem*, vol. ix., 1900-01, p. 372; Froehof, "L'étain en Bolivie." *Annales des Mines*, vol. xix., 1901, p. 186; and *Eng. Min. Jour.*, vol. lxxvii., No. 6, New York, 1904, p. 244.

† Official Return furnished by the "Sociedad de Fomento Fabril," Santiago, and *Estadística Comercial de la República de Chile correspondiente al Año de 1902 and Año de 1903*, Valparaíso. Figures for 1904 not yet received.

‡ Consul-General St. John, "Trade of Peru for the year 1903." *Dipl. and Cons. Reports*. No. 3,281, Ann. Ser., 1904 [Cd. 2236-25], pp. 26 and 27, and for the year 1904. No. 3,491 [Cd. 2682-16] p. 18.

**Borneo.** (See BRITISH BORNEO and DUTCH EAST INDIES.)

**Bosnia.** (See AUSTRIA-HUNGARY.)

**Brazil.**

The mineral resources of Brazil are no doubt great, but working of the deposits is retarded by unsatisfactory mining legislation, and by the want of adequate facilities of communication with the mineral districts. Another obstacle to the progress of the mining industry is the difficulty of satisfactorily registering title deeds.\* No official statistics are published by the Brazilian Government.

In addition to diamonds and gold, Brazil is yielding coal, iron ore, manganese ore, and monazite sand. Petroleum and the ores of copper and lead exist in workable quantities.

*Coal.*†—There are deposits of coal in Rio Grande do Sul, Santa Catharina and Paraná, and the Government has appointed a commission with a view to ascertain their value and availability for practical purposes.

*Diamonds.*—The most important diamond districts in Brazil are Diamantina, Grao Mogul, Chapada Diamantina, Bagagem, Goyaz, and Matto Grosso. The value of the precious stones (mostly diamonds) which were exported in 1903 amounted to £113,582.

*Gold.*‡—The State of Minas Geraes, which contains the famous mines of St. John del Rey and Ouro preto, is the principal gold producer. Dredging has been started in the Coxipó-de-ouro River, and a concession has been granted to a New Zealand Syndicate for similar work in the River Piracicaba.

The gold industry in Northern Brazil on the borders of French and British Guiana, appears to have ceased.

*Iron.*§—The deposits of iron ore in the State of Minas Geraes are particularly rich and extensive.

*Manganese*|| mining is an industry of recent date in Brazil, as no ore was raised until 1894. The principal workings are at Miguel Burnier, Queluz, Sao Goncalo and Piquiry in the province of Minas Geraes, respectively 287 miles (462 kil.) and 308 miles (496 kil.) from Rio. There are also mines near Nazareth, 50 miles to the west of Bahia, and immense and easily accessible deposits at Urucum in the Matto Grosso district.

*Monazite Sand*¶ is obtained near the town of Prado in the north of the State of Bahia, and the trade there remains in the hands of one firm; in 1903 the quantity shipped from Bahia was 1,834 tons, the greater part of which was consigned to Germany. Discoveries of Monazite have recently been made in the States of Espirito Santo and Rio de Janeiro.

*Phosphate of Lime.*—This mineral exists on the Island of Rata, near the Island of Fernando da Noronha.

*Salt.*\*\*—The quantity exported from Sergipe in 1901 was 11,535 metric tons, valued at £6,474.

\* Acting Consul-General Rhind, "Trade of Rio de Janeiro for 1903." *Dipl. and Cons. Reports*, No. 3,283, Ann. Ser., 1904 [Cd. 2236-27], pp. 7 and 8.

† Acting Consul-General Rhind, "Trade of Rio de Janeiro for the year 1903." *Dipl. and Cons. Reports*, No. 3,283, Ann. Ser. 1904 [Cd. 2236-27], p. 14.

‡ Rhind, *op. cit.*, pp. 19 and 20, and Consul Churchill, "Trade of Pará for the years 1898 and 1899." *Dipl. and Cons. Reports*, No. 2,389, Ann. Ser. 1900 [Cd. 1-26], p. 6, and "Trade of Pará for the years 1903 and 1904" No. 3,436, 1905, [Cd. 2236-180].

§ Rhind, *op. cit.*, p. 8.  
|| Rhind, *op. cit.*, p. 35, and H. K. Scott, "The Manganese Ores of Brazil," *Jour. Iron and Steel Institute*, Vol. LVII., 1900, p. 179.

¶ Consul Medhurst, "Trade of Bahia for the year 1903." *Dipl. and Cons. Reports*, No. 3,256, Ann. Ser., 1904 [Cd. 2236], pp. 8, 10 and 11.

\*\* Consul Medhurst, "Trade of Bahia and Sergipe for the year 1901." *Dipl. and Cons. Reports*, No. 2,888, Ann. Ser. 1902 [Cd. 786-192], pp. 10 and 14.

## BRAZIL—continued.

TABLE 419.

QUANTITY and VALUE of MINERALS produced and exported during the Year 1903.\*

Mineral.	1903.		1904.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£		
Gold (bar) exported ...	Kilos. 4,302	468,591		
Manganese ore (exported) ...	161,926	248,010		
Monazite (exported) ...	3,299	74,139		
Precious stones (exported)...	—	113,582		
Salt ... ..	†	—		

## Bulgaria.‡

Bulgaria possesses fairly rich deposits of coal and lignite; the ores of copper, iron, lead, and manganese are known to exist, but are not yet worked. Gold is obtained in many places from the sand of rivers. Limestone and marble are quarried on a small scale.

*Lignite.*—The State works lignite mines at Pernik and Bobovdol. The Pernik colliery is about 19 miles from the capital, with which it is connected by a railway, and it can therefore be worked to advantage. The Bobovdol colliery is far from any railway, and is worked to supply local wants only, the total output being only 2,000 tons a year.

The Trévna coalfield, 38 miles from Tirnovo, likewise lacks a railway for getting rid of its produce, and is worked on a very limited scale indeed.

TABLE 420.

## PERSONS EMPLOYED at the PERNIK LIGNITE MINES.

	Year.				Number of Persons Employed.
1903	...	...	...	..	1,688
1904	...	...	...	...	2,305

\* Rhind, *op. cit.* pp. 25 and 26.

† Figures not received.

‡ Official information furnished by the Chief of the Section of Mines of the Ministry of Commerce and Agriculture, Sofia.



BULGARIA—*continued*.

TABLE 421.

QUANTITY and VALUE of LIGNITE produced at the PERNIK MINES during the  
Years 1903 and 1904.

Year.				Quantity raised.	Value.
				Metric Tons.	
1903	...	...	...	113,250	{ Francs ... 1,047,004 { £ sterling ... 41,880
1904	...	...	...	142,315	{ Francs ... 1,305,785 { £ sterling ... 52,231

TABLE 422.

DEATHS at the PERNIK LIGNITE MINES during the Years 1903 and 1904.

Year.				Number of Deaths.	Death-rate per 1,000 Persons Employed.
1903	...	...	...	Nil.	—
1904	...	...	...	Nil.	—

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### Cameroons.\*

*Salt*.—Important brine springs are known in the Keaka district and near the Cross River.

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### Canary Islands.

Lava and consolidated volcanic ash are quarried in various places for supplying building stone and paving slabs.

Loose cinders, dug from the sides of volcanic cones, are utilised for the manufacture of big blocks of concrete.

Pumice stone is obtained from the flanks of the Peak of Teneriffe and exported into England. 30 tons valued at 300 *pesetas* (£12) were obtained in 1903 and 6 tons valued at 60 *pesetas* in 1904.†

Limestone for local use is quarried in Fuerteventura, and to a small extent in Grand Canary. This latter island has a set of pans in which salt is obtained from sea-water by solar evaporation.

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### Celebes (*See* DUTCH EAST INDIES).

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\* Buchanan, "Report on the German Colonies for the year ending 30th June, 1901." *Dipl. and Cons. Reports*, Ann. Ser., No. 2,790 [Cd. 786-94]. London, 1902, p. 14.

† *Estadística Minera de España correspondiente al año de 1904*, Madrid, 1905, p. 50. These figures are also included with Spain.



## Chili.

A very useful publication \* on the mineral industry has been issued (1905) under the direction of the Sociedad Nacional de Minería. The volume contains, in addition to complete statistics for the year 1903, a full description of the minerals, and is illustrated with maps showing the geology of the country and the localities of the mineral deposits.

The wealth of Chili is largely due to its mineral treasures, of which nitrate of soda is the most important.

Nearly the whole of the mineral produce is exported to other countries; the quantities of metal contained in the ores are now given in Table 421. The total value of the minerals exported from Chili in 1903 amounted to £12,823,269, and it appears from Consul-General Sir Berry Cusack-Smith's report that over 31 per cent. of this amount was for the United Kingdom, 21 per cent. for Germany, 17 per cent. for the United States, and 15 per cent. for France.†

*Borate of Lime.*‡—Chili is one of the principal producers of borate in the world. Its chief deposits are at Ascotan, Ollagüe, El Pedernal and Maricunga. Valuable deposits, containing more than 600,000 tons of the mineral, are stated to exist within reach of the Port of Taltal, but the latter will remain undeveloped until the demand which is amply supplied at present by Antofagasta and Peru increases.

*Coal.*\*—The principal coal-fields are South of Concepcion. The coal, which is of Eocene age, has been extensively worked for many years at Coronel and Lota, in the Department of Lautaro; these two places furnished nearly seven-ninths of the total output in 1903. Still further South there is coal of Miocene age extending to the Straits of Magellan.

*Copper.*\*—Copper mining, once the chief mineral industry of the country, is still of considerable importance. The copper resources of the country are said to be great. Copiapó is the principal copper-producing district.

*Guano.*—The exportation of this mineral is prohibited by the Government, and the quantity obtained is sold and distributed among the southern parts of Chili. In 1903 the production was 11,133 metric tons, and of this quantity 9,842 tons were sent from the sub-port of Punta Pichalo for distribution.\*

*Nitrate of Soda.*‡—This industry continues to flourish. In the year 1903 there were 86 saltpetre works in operation, of which 72 were in Tarapacá; they produced 1,461,825 metric tons of nitrate of soda and 157 metric tons of iodine. The diggings and works afforded employment to 24,445 persons, of whom 17,398 were Chilians, 2,795 Peruvians, and 3,317 Bolivians; the remaining 935 persons belonged to various nationalities. The principal ports at which the nitrate is shipped are Iquique, Caleta Buena, and Tocopilla.

Some very interesting reports by Dr. A. Plagemann,§ and by Bergassessor Dr. Semper and Dr. Michels,|| respectively, concerning the nitrate industry of Chili, have recently (1904) been published in Germany.

*Salt.*‡—A bed of salt of unknown thickness and extending over an area of more than 120 square miles is being worked near Punta de Lobos. The output in 1903 was 16,263 tons, of which quantity over 10,240 tons were exported.

*Sulphur.*\*—The sulphur is obtained from the mines near Arica as well as from the deposits at Taltal, but as the latter are situated at too great a distance from the port to be worked at a profit the operations are reduced to the extraction of sufficient mineral for the manufacture of powder used in excavating "Caliche" (the raw material from which nitrate of soda is manufactured).

\* *Estadística Minera de Chile, 1903*, Vol. I, Santiago, 1905.

† Vice-Consul Rowley, "Trade of Chili for the year 1900." *Dipl. and Cons. Reports*, No. 2,700, Ann. Ser., 1901, pp. 28 and 29 and Consul-General Sir Berry Cusack-Smith, "Trade of Chili for the year 1903." *Dipl. and Cons. Reports*, No. 3,307 Ann. Ser. 1904 [Cd. 2236-51], and Acting Consul-General Rowley, "Trade of Chili for the year 1904." *Dipl. and Cons. Reports*, No. 3,465, Ann. Ser., 1905 [Cd. 2236-209].

‡ *Memoria del Delegado Fiscal de Salitreras presentada al Señor Ministro de Hacienda en 1904*, Santiago de Chile, 1904, p. 33, and Anexos pp. 69, 75, and 87.

§ *Der Chile Salpeter*, Der Saaten-, Dünger- und Futtermarkt, S.W., 29, Berlin.

|| *Die Salpeterindustrie*, *Zeitschr., B.H. S.W.*, Vol. lii., Jahrgang, 1904, Berlin.

CHILI—continued.

TABLE 423.

NUMBER of PERSONS employed at MINES and MINERAL WORKINGS during the Year 1903.

	Mines or Mineral Workings.						Persons Employed.
	Coal Mines	...	...	...	...	...	6,437
	Metalliferous Mines	...	...	...	...	...	13,710
	Nitrate of Soda	...	...	...	...	...	24,445
	Other Mineral Workings	...	...	...	...	...	2,000
	Total	...	...	...	...	...	46,592

TABLE 424.

QUANTITY and VALUE of MINERALS and METALS produced during the Years 1903 and 1904.\*

Mineral or Metal.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Pesos.	Metric Tons.	Pesos.
Borate of Calcium ... ..	16,879	2,363,048		
Coal ... ..	827,112	8,250,720		
Cobalt ore ... ..	285	99,695		
Copper (fine) ... ..	29,923	21,438,397		
Gold (fine) ... ..	Kilos. 1,425	2,526,730		
Guano ... ..	11,133	267,466		
Iodine ... ..	157	1,687,327		
Lead (metal) ... ..	71	9,097		
Manganese ore ... ..	17,110	682,400		
Nitrate of Soda... ..	1,461,825	140,102,012	1,537,375†	Not stated.
Salt ... ..	16,263	324,270		
Silver (fine) ... ..	Kilos. 39,012	1,759,610		
Sulphur... ..	3,441	337,515		
Sulphuric Acid ... ..	1,600	176,000		
Other Minerals... ..	—	800		
Total Value in Pesos ...	—	180,025,087		
“ “ „ £ sterling ...	—	£13,501,881		

\* *Estadística Minera de Chile*, 1903, Vol. I., Santiago, 1905. Complete figures for 1904 not yet received.  
† Rowley *op. cit.* for 1904, p. 18.



## China.\*

China is rich in many minerals and more particularly in coal, which is widely distributed throughout the vast empire, and especially in the provinces of Pechili, Shan-si, Shan-tung, Ho-nan, and Hu-nan; indeed the richness in coal seems to be unparalleled. In many provinces iron ore is likewise abundant.

Among other minerals may be mentioned the ores of antimony, copper, gold, iron, lead, quicksilver, silver, tin, and zinc, besides petroleum, salt, and sulphur. A good general idea of the distribution of the mineral wealth of China is obtainable from a map accompanying some articles by Mr. Lynwood Garrison.†

The coal-fields of north-eastern China, and especially those of western Chili and eastern Shansi, have been described by Mr. Drake.‡

In 1904, 6,666 tons of antimony and antimony ore were obtained from the native mines of Hunan.§

The output of coal in 1903 from the Kaiping collieries in the province of Pechili was 700,000 tons.§

The province of Kuangsi has deposits of coal and the ores of antimony, gold, and tin,|| but this mineral wealth remains untouched, and the provincial regulations make mining by foreigners impossible.

An installation, under German management, has been erected at Wuchang, in the province of Hupe, to concentrate lead and zinc ores, which is capable of treating 75 tons of ore daily. The iron mines at Ta-yeh shipped 38,108 tons of ore to Japan in 1904, and a large quantity was sent to the ironworks at Hanyang in the province of Kiangsi. The daily output of pig iron from the Hanyang works is about 120 tons.¶

The province of Sze-chuan,\*\* in the extreme west, is remarkable for its salt and natural gas. The annual output of the brine wells of Tze-liu-ching in Sze-chuan is estimated to be about 178,000 tons of salt.

The province of Chi-li†† has yielded gold for many centuries. The metal occurs in quartz veins and in alluvial deposits; the output in 1898 was 50,000 ozs.

Coal and the ores of gold, iron, lead and silver are said to abound in the province of Fohkien. The goldfields in the Shao-wu district have been surveyed in 1903, and are reported to be very valuable.‡‡

The province of Kwei-chau§§ is rich in coal, ores of copper, iron, and quicksilver.

The province of Shan-si|||| is remarkable for its great wealth of coal. The total annual output, reckoned at 50,000 tons in 1900, is no index of the great resources of the coalfields. The Peking Syndicate's new mineral line from Ching-hua to Tao-kou is now completed and will be a great advantage so far as the working of the anthracite deposits of the province of Shansi is concerned. Tse-chou on the Shansi plateau is reported to be one of the richest coal and iron regions in the world.

The province of Yunnan produced 65 tons of tin valued at £4,387 from its mines at Chao Tung, An Ning, and other places in 1903, and also 280 tons of lead (pig) valued at £3,905, which were exported from Chung-King. Salt is obtained from mines and brine wells near Pu Erh, and some of it is exported to the British Shan States and French

\* The "salt wells of China." *Jour. Soc. Arts*, Vol. XLVI., 1898, p. 385.

Fearon and Allen.—"The Chinese, and recent industrial progress in China." *Eng. Mag.*, Vol. XVI., 1898, p. 166.

M.R.D.—"Chinese Minerals." *The Investors' Review*, Oct. 1897, p. 216.

Jameson.—"Coal and Iron in Eastern China." *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 365.

Kurita.—"Coal and Iron Deposits of Eastern China." *Eng. Min. Jour.*, Vol. LXV., 1898, p. 491.

† "The Mining and Industrial Development of China." *Mining and Metallurgy*, Vol. XXI., 1901, p. 65.

‡ *Trans. Am. Inst. M.E.*, vol. xxxi., 1901.

§ Jamieson, "Foreign trade of China for the year 1903." *Dipl. and Cons. Reports*, No. 3,280, Ann. Ser., 1904 [Cd. 2236-24], and Consul-General Fraser, "Trade of Hankow for the Year 1904." *Dipl. and Cons. Reports*, No. 3,386, Ann. Ser., 1905 [Cd. 2236-130].

|| Fox, "Trade of Wuchow for 1902." *Dipl. and Cons. Reports*, No. 3,006, Ann. Ser., 1903 [Cd. 1386-83], p. 5 and p. 13.

¶ Jamieson, *op. cit.* No. 3,280; and Fraser, *op. cit.* No. 3,386.

\*\* Uperaft, "The Salt Wells of Sze-chuan, China." *Eng. Min. Jour.*, Vol. LXIX., 1900, p. 525; and Murdoch, "Notes on Brine and Oil Wells in Western China." *Trans. Inst. M. and M.*, Vol. IX., 1900-01, p. 362.

†† Hoover, "Metal Mining in the Provinces of Chi-li and Shantung, China." *Proc. Inst. Min. and Met.*, Vol. VIII., 1900, pp. 324-331.

‡‡ Consul Mansfield, "Trade of Amoy for the year 1899." *Dipl. and Cons. Reports*, No. 2,502, Ann. Ser., 1900 [Cd. 1-139], p. 8, and Jamieson, *op. cit.* No. 3,280.

§§ Prospectus of the Anglo-French Quicksilver and Mining Concession (Kwei-chau province) of China, Ltd., March, 1899.  
||| Drake, "The Coalfields around Tse Chou, Shan-si." *Trans. Amer. Inst. M. E.*, New York, 1900, and Jamieson, "Trade of Tientsin for the years 1900-03." *Dipl. and Cons. Reports*, No. 3,127, Ann. Ser., 1904, [Cd. 1766-61].



Laos. The exports from Hankow of Yunnan ore in 1904 were 4,906 tons of lead ore and 3,162 tons of zinc ore.\*

The coal deposits in the neighbourhood of Wuchow remain undeveloped for want of capital.

Twenty-two tons of tin, value at £1,800, obtained from a mine in the Ching Yüan district, were exported from Wuchow in 1904.†

The province of Shan-tung‡ possesses deposits of coal, copper, diamonds, gold, iron, lead, and silver. The first named mineral is the most important; the Fangtzu coal mine having a daily output in 1903 of 300 tons. An extensive bed of hæmatite in the neighbourhood of the I-chou-fu coalfield, which can be worked opencast, may be of importance to Kiao-chou in the future.

In the province of Kiangsi the output of the Pinghsiang Collieries is at present about 500 tons a day, but as soon as further railway facilities are completed it is anticipated that this amount will be increased to 2,000 tons. The coal obtained is used principally for the Hanyang ironworks. Near Siangtan a greater development of the iron mines is contemplated.§ Copper is mined to some extent in the province.

In 1904, 83,291 tons of coal valued at £100,203, and 13,757 tons of pig iron valued at £44,611 were exported from Hankow.||

No mineral statistics are published by the Chinese Government.

The Director of the United States Mint states that 11,021 kilos. of fine gold of the estimated value of £1,504,045 were produced in 1903.¶

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### Cochin China. (See INDO-CHINA.)

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### Colombia.\*\*

*Asphalt.*—A deposit of asphalt is being worked near Chaparral, Tolima, and about 2,000 tons are being shipped per annum.

*Coal.*—Coal is mined on a small scale only, though extensive beds of bituminous coal occur in various parts of the country.

*Copper.*—Deposits of copper ore are known to exist, but they are unworked.

*Emeralds.*—Colombia holds almost a monopoly of the trade in these gems. The famous mines of Muzo in the Boyacá district, have been worked continuously for more than three centuries. The other emerald mines, which were formerly worked by the Spaniards, are Cosquez and Somondoco. The value of the production in 1903 is estimated at £20,000.

*Gold.*—This is the most important mineral of the country. The precious metal is obtained by hydraulic mining, by dredging the beds of existing rivers, and by working auriferous veins. Antioquia, Cauca, and Choco are the principal mining districts.

*Manganese ore.*††—This ore is obtained about 40 miles east of Colon.

*Salt.*—Rock salt is mined near Bogota.

*Silver.*—Tolima is the principal district of the silver mines.

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\* Acting-Consul Sly, "Trade of Chung King for the year 1903." *Dipl. and Cons. Reports*, No. 3,290, Ann. Ser., 1904 [Cd. 2236-34]; Acting-Consul Carey, "Trade of Ssumao and Mengtse for the year 1900." *Dipl. and Cons. Reports*, No. 2,741, Ann. Ser., 1902 [Cd. 786-45]; and Fraser, *op. cit.*, No. 3,386.

† Acting-Consul F. E. Wilson, "Trade of Wuchow for the year 1904." *Dipl. and Cons. Reports*, No. 3,449, Ann. Ser., 1905 [Cd. 2236-193], p. 22.

‡ Buchrucker, "Ueber eine bergmännische Forschungsreise in der Provinz Shantung." *Zeitschr. f. prakt. Geologie*, 1899, p. 206, and Jamieson, *op. cit.*, No. 3,280.

§ Consul Glennell, "Trade of Kiukiang for the year 1902-03." *Dipl. and Cons. Reports*, No. 3,293, Ann. Ser., 1904 [Cd. 2236-37].

|| Fraser, *op. cit.*, No. 3,386.

¶ *Report of the Director of the United States Mint for the year ended June 1904*, Washington, 1904, p. 142.

\*\* Granger and Treville, "Mining Districts of Colombia." *Trans. Am. Inst. Min. Eng.*, Vol. XXVIII., 1898 and Vice-Consul Dickson, "Trade of Colombia (excepting the Panama District) for year 1901." *Dipl. and Cons. Reports*, No. 2,717, Ann. Ser., 1902 [Cd. 786-51], and *ibid* for 1903, No. 3,114 [Cd. 1766-48].

†† *Trans. Am. Inst. Min. Eng.*, Vol. XXVII., 1897, p. 63.



COLOMBIA—continued.

TABLE 425.

QUANTITY and VALUE of GOLD and SILVER produced during the Years 1902 and 1903.\*

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
Gold (Fine) ... .. Kilos.	3,796	£517,988	4,100	£559,425
Silver (Fine) ... .. Kilos.	55,269	193,347†	35,117	125,154‡

Congo Free State.‡

No mines have as yet been worked by Europeans ; but the natives of the Upper Congo dig a little iron ore and copper ore, and extract the metals for the purpose of making weapons, tools and utensils. Five kilograms of crude gold, valued at 15,000 francs, were obtained and exported from the Upper Congo in 1903.

Corea.§

Although during 1904 little progress was made towards developing the rich mineral resources of Corea, there appears to be signs of greater activity in the near future. Several gold mining concessions are under consideration, and a considerable amount of prospecting work has been performed for other minerals.

Coal, which has already been mined in Ping-Yang, is now known to exist in five of the provinces, and one field in Kyeng Sang province is reported to contain a seam 10 feet 9 inches thick. Large deposits of smokeless coal exist in the country.

The value of the gold exported from Corea in 1904 amounted to £511,396, but this sum does not include the value of the gold carried away by persons in their luggage. Gold is being worked in the province of Ping Yang, and is mainly obtained from quartz mines worked by American and European companies. The Gwendoline mine in the Unsan district in the year 1900 employed 736 persons, and another gold mine at Tangokae, or Kimo Song, employed more than 500.

In addition to the gold, 1,067 tons of coal valued at £711, and 176 tons of copper ore, valued at £4,496, were also exported in 1904.

Costa Rica.||

There are two groups of gold mines near the Pacific Coast which are being worked regularly, viz., the Bella Vista Group near Miramar, 15 miles from Puntarenas, and the Abangares group, 18 miles from Puerto Yglesias on the Gulf of Nicoya. At the latter the Abangares Goldfields Company did not crush any quartz in 1904, but erected a new 40-stamp mill during that year. The value of the gold from the mines exported during the year 1903 amounted to £46,914, and in 1904 only £8,367.

\* Report of the Director of the United States Mint for the year ended June, 1904, Washington, 1904, p. 142.

† Commercial value of fine silver.

‡ Information furnished by the Département des Finances, Brussels ; and *Bulletin de l'État Indépendant du Congo*, No. 3, Brussels, May, 1904.

§ Consul Lay, "Trade of Corea for the year 1903." *Dipl. and Cons. Reports*, No. 3,220, Ann. Ser. [Cd. 1766-154], 1904; and Acting Vice-Consul Harrington, *op. cit.* for 1901, No. 3,407 [Cd. 2236-151], 1905.

|| Consul Cox, "Report on the Trade of Costa Rica for the year 1903." *Dipl. and Cons. Reports*, No. 3,259, Ann. Ser. 1904 [Cd. 2236-3], and for 1904, No. 3,444 [Cd. 2236-188], 1905.



Besides asphalt, copper, iron, and manganese, which have been more or less constantly mined in Cuba, there are many other minerals to be found distributed throughout the island, such as asbestos, clay, coal, gold, lead, limestone, mercury, naphtha, petroleum, silver, and zinc.

*Asphalt.*—A number of mines are worked for asphalt in the province of Habana, but large deposits exist in several other places.

*Clay.*—Clay fit for making bricks and tiles is abundant.

*Copper ore.*—The bulk of the copper ore which is raised at the present time comes from the celebrated workings of El Cobre in the province of Santiago de Cuba. The mineral also occurs in many places in the eastern part of the island.

*Gold.*—This metal is said to abound in the provinces of Santa Clara and Santiago.

*Iron ore.*—The latter province possesses extensive deposits of iron ore, and the mineral is obtained by quarrying; there are no mines in the ordinary sense of the term. The Spanish-American Iron Co. and the Juragua Iron Co. are the principal producers.

*Limestone.*—This rock abounds everywhere. In 1901 the quantity of stone (principally limestone) obtained was 461,025 cubic metres, valued at £176,621. Much of the lime obtained in Cuba is used for bleaching the sugar.

*Manganese ore.*—The deposits of manganese ore hitherto worked are situated near La Maya and El Christo in the vicinity of the city of Santiago. Much of the Cuban ore contains from 47 to 50 per cent. of metal, and is exported to the United States.

TABLE 426.

QUANTITIES and VALUES of MINERALS EXPORTED during the years 1903 and 1904.

Description of Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Asphalt ... ..	4,790	7,111	8,926	24,493
Copper Ore ... ..	800	2,127	17,573	60,090
Iron Ore... ..	619,370	319,522	386,724	177,383
Manganese Ore... ..	21,070	24,771	17,683	18,269
Total Value ... ..	—	353,531	—	280,235

### Curaçao. (See DUTCH WEST INDIES.)

### Denmark.†

Chalk and calcareous marl are quarried near Aalborg. The total quantity of cement and raw chalk produced in 1904 was 320,000 tons.

Bog iron ore exists in Jutland,‡ and in years gone by it was occasionally worked and smelted on a small scale.

### FAROE ISLANDS.§

For at least two centuries it has been known that the island of Suderö possesses deposits of coal, and it is rumoured that they will be worked.

\* Estadística General, Año de 1903, Habana, 1904, p. 164; "Commercial Cuba in 1903," published by the United States Bureau of Statistics, Washington, 1904, p. 1,207; and Carden, "Trade of Cuba for the year 1904." *Dipl. and Cons. Reports*, No. 3,484, Ann. Ser., 1905 [Cd. 2682-9 and 47], and information furnished by the Secretaria de Hacienda of Cuba to the United States Geological Survey.

† Consul Boyle, "Trade and Agriculture of Denmark for the year 1904." *Dipl. and Cons. Reports*, No. 3,392, Ann. Ser. 1905 [Cd. 2236-136].

‡ *Glückauf*, Vol. XXXIV., 1898, p. 872.

§ "Die Kohlen auf den Faröer." *H.u.h. Zeitung*, Vol. LX., 1901, p. 162.

GREENLAND.\*

The quantity of cryolite obtained from Ivigtut in 1903 was 9,110 tons, and in 1904 only 2,215 tons.  
During the summer months 92 persons were employed in 1903, and 48 in 1904. These numbers were reduced during each winter by about 32 and 23 men respectively.  
No fatal accidents occurred during the years 1903 and 1904.

ICELAND.

*Coal.*—A bed of coal is said to have been discovered at Nordfjord, in Iceland.  
*Iceland Spar.*†—About ten men are employed in the summer at a quarry on the east coast of the island for the purpose of getting transparent calcite for optical instruments. The best quality is worth £12 per kilogramme. The total value of the yield is about £280 yearly.

Dutch East Indies.‡

Many of the Dutch Colonies in the East Indies contain valuable mineral deposits which are being worked on a large scale.

BANCA.

The alluvial diggings of the Island of Banca still yield large quantities of tin ore, and the output is increasing.

TABLE 427.

Year.	Persons Employed.	Quantity of Metallic Tin produced.	
		Pikols.§	Metric Tons.
1902 1903 ... ..	14,270	171,213	10,355½
1903-1904 ... ..	13,699	185,692	11,230

The number of persons in the table includes not only the actual diggers of the ore, but also the charcoal burners and the smelters.

BILLITON.

Like Banca, its neighbour Billiton is a large producer of tin ore.

TABLE 428.

Year.	Average Number of Persons Employed.	Quantity of Metallic Tin produced.	
		Pikols.	Metric Tons.
1902-1903 ... ..	7,207	70,768	4,280½
1903-1904 ... ..	8,702	72,673	4,395

BORNEO.¶

*Coal.*—The mines of Mahakkam River at Kutei in South-Eastern Borneo produced 5,115 metric tons of coal in 1903, and 3,064 tons in 1904. Other mines in South-Eastern Borneo produced 760 metric tons in 1903, and 1,018 tons in 1904.

\* Official Report furnished by the Danish Government.  
† *Mineral Mag.*, Vol. XIII., 1903, p. 396.  
‡ Official Return furnished by the Colonial Department of the Dutch Government.  
§ 1 Pikol = 133½ lbs. avoirdupois.  
¶ Corrected figures.  
¶ See also British North Borneo, p. 331.



DUTCH EAST INDIES—BORNEO—*continued.*

*Diamonds.*—The estimated output of diamonds from Western Borneo was 602 carats in 1903, and 720 carats in 1904. Profitable diamond diggings were discovered by chance in the Martapura district of Southern and Eastern Borneo.

*Gold.*—There are three well marked auriferous districts in the island, viz., Sambas in Western Borneo, a second at the sources of the Kehajang and Kapuas rivers in Central Borneo, and a third in the south-eastern corner of the island.\*

The output of gold from the Western Division of Borneo was 1,005 thail, or 54 kilograms, in 1903, and 774 thail, or 42 kilograms, valued at fl. 58,000 or £4,833, in 1904. The gold diggers are mostly Chinamen.

*Petroleum.*†—Borneo is now a producer of mineral oil. The oil-field is situated in the Sultanate of Kutei, a Dutch protectorate on the East Coast of Borneo. The crude oil is either refined on the spot or shipped direct from Balek Pappan. Steamers are using the crude oil as fuel, and also the liquid residue from the petroleum refineries. In 1904 226,422 metric tons of crude oil were produced. Work was resumed at the Poeloe Miang (Kutei) Concession during the year 1904.

## CELEBES.‡

*Gold.*—The precious metal has long been worked by the natives in the northern arm of the island, and within the last decade several European companies have been formed for the purpose of conducting operations on a larger scale.

## JAVA.§

Among the mineral productions of Java may be named coal, gold, iodine, magnetic iron, manganese ore, and petroleum.

*Coal.*—A little coal has been worked in the Sedan district.

*Gold.*—The natives, especially the women, obtain some gold by washing river sand in wooden bowls. Several gold mining companies have been started with European capital, and rich gold ore is being exported to Liverpool.

*Iodine.*—The output of crude iodide of copper was 16,800 kilograms in 1904, containing 50 per cent. of iodide.

*Manganese.*—Manganese ore is produced in the regencies of Pengasih and Nanggöelan. The output in 1898 was 4,800 tons and in 1899 1,388 tons.

*Magnetic Iron.*—A concession has been granted for the exploitation of beds of magnetic iron sand lying in the neighbourhood of Tjilatjap, on the South Coast of Java.

*Petroleum.*—Petroleum occurs in various parts of the island, and is obtained on a large scale by borings. The combined output of the wells was 106,244,811 litres or 98,777 metric tons of crude oil in 1903, and 98,471,298 litres or 91,550 metric tons of crude oil in 1904.

## SINGKEP.||

The small tin-producing island of Singkep forms a sort of connecting link between Banca and the Malay Peninsula.

\* Truscott, "The Mining and Occurrence of Gold in the Dutch East Indies." *Trans. Inst. M. and M.*, Vol. X., 1901, with map.

† *Petroleum*, Vol. I., London, 1900, p. 179.—*Shipping and Mercantile Gazette and Lloyd's List*, London, 22nd June, 1900; and Official Return furnished by the Colonial Department of the Dutch Government.

‡ Truscott, *op. cit.*

§ Consul Davids, "Trade of Java for the Year 1901" *Dipl. and Cons. Reports*, No. 2,863, Ann. Ser., 1902 [Cd. 786-167], p. 9; Consul Fraser "Trade of Java for the year 1904," *Dipl. and Cons. Reports*, No. 3,403, Ann. Ser., 1905 [Cd. 2236-147], p. 11; and Official Return furnished by the Colonial Department of the Dutch Government.

|| Official Return furnished by the Colonial Department of the Dutch Government and *Jaarboek van het Mijnwezen Nederlandisch Oost-Indie Dertigste Jaargang*, 1901, Batavia, 1901.



DUTCH EAST INDIES—continued.

TABLE 429.

Year.	Number of Mines at Work.	Number of Persons Employed.	Quantity of Metallic Tin produced.	
			Pikols.	Metric Tons.
1902-1903 ... ..	14	1,738	7,254	439
1903-1904 ... ..	15	1,380	6,007	364

About two-thirds of the persons were engaged at the tin diggings proper, and one-third in getting charcoal and smelting the ore.

SUMATRA.\*

*Coal.*—The Dutch Government is working collieries in the Ombilien coalfield, which is now connected by rail with the port of Padang. One of the principal seams is 10 feet thick, and the other from 26 feet to 39 feet. The coal is said to be very free from ash.

*Gold.*—The gold-mining industry is progressing steadily. The principal workings are at Redjang Lebong in the south-west part of the island, and they yielded 30,607 ozs. (952 kil.) of fine gold and 175,479 ozs. (5,458 kil.) of fine silver during the year 1903, and 38,259 ozs. (1,190 kil.) of fine gold and 181,201 ozs. (5,636 kil.) of fine silver in 1904. Two other undertakings, Soemalata I. also yielded 5,803 ozs. (180 kil.) of fine gold, and Palaleh 5,415 ozs. (168 kil.) of fine gold and 1,688 ozs. (52 kil.) of fine silver during 1904.

*Petroleum.*—Sumatra's principal petroleum wells are on the east coast at Langkat and Palembang; the former yielded 138,336,800 litres of crude petroleum in 1904, and the latter 192,021,500 litres, whilst the rest of Sumatra yielded 338,373,600 litres, making a total output of 668,731,900 litres, or 637,985 metric tons of crude oil as against a total output of 563,990† metric tons in 1903. The oil is exported to the Straits Settlements, Burmah, Siam, Cochin China, and elsewhere.

TABLE 430.

NUMBER OF PERSONS EMPLOYED and QUANTITY OF COAL PRODUCED at COAL MINES in 1903 and 1904.

Year.	Number of Persons Employed.	Quantity of Coal produced.
		Metric Tons.
1903 ... ..	3,173	201,311
1904 ... ..	3,814	207,280

Dutch Guiana or Surinam.‡

Mining in Dutch Guiana is confined almost entirely to the working of alluvial gold deposits in the Surinam, Lawa, Saramaca and Maroni districts,‡ but up to the present the gold industry has been unable to make much progress, owing principally to difficulties of transport. The railway, which was commenced in 1904, is expected to be completed so as to reach the goldfields in 1906.

The quantity of gold produced was 682 kilograms, valued at fl. 935,009 or £77,918, in 1903, and 802 kilograms, valued at fl. 1,098,574 or £91,548, in 1904.

\* Official Return furnished by the Colonial Department of the Dutch Government and *Jaarboek van het Mijnenwezen in Nederlandsch Oost-Indië* Dertigste Jaargang, 1901. Batavia, 1901; and Consul Fraser, *op. cit.*, No. 3,403 [Cd. 2236-147], 1905.

† Corrected figures: The quantities in Part iv. of the General Report and Statistics for 1903, p. 395, were erroneously stated, they should have been 229,900,893 litres of crude oil and 200,746,917 litres of refined oil, equivalent to a total production of 563,990 metric tons of crude oil.

‡ Official Return furnished by the Colonial Department of the Dutch Government; and Consul Piggott, "Trade of Dutch Guiana for the year 1904." *Dipl. and Cons. Reports*, No. 3,463, Ann. Ser., 1905 [Cd. 2236-207].

§ Report received by Foreign Office from Consul Piggott, Paramaribo, February, 1905.



## Dutch West Indies.\*

## ARUBA.

Gold mining is carried on by an English company. In 1903, 21 kilograms, valued at fl. 22,850, or £1,904, and in 1904, 98 kilograms, valued at fl. 133,318, or £11,110, were shipped.

Phosphate of lime was quarried with great profit between the years 1884 and 1892; in spite of lower prices the deposits are still being worked, and the quantity exported in 1903 was 15,511 tons (25,082 cubic metres), and in 1904, 22,764 tons (36,810 cubic metres); about one half of the quantity shipped comes to Great Britain.

## BONAIRE, AND ST. MARTIN.

Salt is obtained by the natural evaporation of sea water at both these islands. In 1903 the export of salt from Bonaire was 100,976 hectolitres, valued at fl. 48,468, or £4,039, and in 1904, 98,304 hectolitres, valued at fl. 47,185, or £3,932. From St. Martin in 1903 the export was 60,895 hectolitres, valued at fl. 29,229 or £2,436, and in 1904 only 8,527 hectolitres, valued at fl. 2,922 or £243.

## CURAÇAO.

The phosphate of lime mines in this island have been at a standstill since 1895. In 1903, 7,026 metric tons of salt, valued at fl. 33,973 or £2,831, and in 1904, 9,896 metric tons, valued at fl. 46,840, or £3,903, were exported from Curaçao to the United States and Porto Rico.

## SABA.

The sulphur deposits are no longer worked.

## Ecuador.†

It is said that gold abounds, though the yearly output is small. It is obtained mainly from alluvial deposits, but the auriferous veins are being tested on a commercial scale.

There are also deposits of anthracite, copper ore, petroleum, salt, and silver ore.‡

It is not surprising that one article of commerce of a country possessing active volcanoes should be pumice stone. It is cut up for sale into lumps like bricks.

TABLE 431.

QUANTITY and VALUE of GOLD and SILVER produced during the years 1902 and 1903.§

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
Gold (fine) ... ..	Kilos. 301	£ 41,067	Kilos. 413	£ 56,345
Silver (fine) ... ..	Kilos. 240	842	Kilos. 1,244¶	4,390

## Egypt.\*\*

*Clays.*—Pottery clays are worked at Bulak, Tebbani, Aswan, and Korosko, and shales between Esna and Qena; and a concession has been granted for working kaolin at Aswan.

*Coal.*—Boring operations for coal made at Redesia, near Edfu, were carried to a depth of 400 metres and then abandoned, no coal having been found. Thin seams of lignite have recently been discovered in Kharga Oasis, and are also reported from Dakhla, but similar thin seams are known to occur in several localities in Egypt.

\* Official Return furnished by the Colonial Department of the Dutch Government, and Consul Jesurun, "Trade of Curaçao and its Dependencies for the years 1902-04," *Dipl. and Cons. Reports*, No. 3,423, Ann. Ser., 1905 [Cd. 2236-172], 1905.

† Consul Soderström, "Trade of Quito for the year 1897," *Dipl. and Cons. Reports*, No. 2,101, Ann. Ser., 1898 [C. 8648-123].

‡ Consul Chambers, "Trade of Guayaquil for the year 1898," *Dipl. and Cons. Reports*, No. 2,246, Ann. Ser., 1899 [C. 9044-72].

§ *Mining Journal*, Vol. LXX., 1900, p. 620.

¶ *Report of the Director of the United States Mint for the year ended June, 1904*, Washington, 1904, p. 142.

|| Commercial value of fine silver.

¶ The Mineral Industry for 1903, Vol. XII., New York 1904.

\*\* Information furnished by the Director-General of the Survey Department, Cairo.



EGYPT—continued.

*Copper.*—The working for copper at Wadi Samarah in eastern Sinai has been discontinued owing to expense of development.

*Gems.*—The turquoise mines at Wady Maghara in the peninsula of Sinai are no longer being worked, except by the local Arabs. Crystals of peridot are obtained on an island in the Red Sea, south of Qosseir.

*Gold.*—The Um Garairat, Um Rus, Eridia, Attola, Harmur, and Nile Valley block E mines, all situated in the south eastern desert of Egypt, are being actively developed. Those of Um Garairat and Um Rus are at present the most important, and at the latter crushing for gold commenced on the 6th March, 1905.\*

*Gypsum.*—This mineral is of great commercial importance in Egypt, being obtained in large quantities from the deposits near Helwan and Alexandria. Concessions have been granted to work the deposits near Cairo in the Fayum province and North of Ismalia.

*Petroleum.*—The boring for mineral oil at Jebel Zeit on the west shore of the Gulf of Suez has ceased, the oil not having been obtained in paying quantity.

*Phosphate of Lime.*†—Large deposits of phosphate of lime have been discovered in Dakhla Oasis in the Nile Valley neighbourhood between Qena and Edfu, and in the Red Sea hills west of Qosseir, &c., in rocks of Cretaceous age, and a company is now working those in the Nile Valley. The deposits near Qosseir have been traced for a distance of 40 miles.

*Salt.*—The natural evaporation of the waters of Lake Mareotis leaves a considerable quantity of salt, and this source of supply is still largely utilized as it has been for many years past. Some large salt pans constructed near Port Said for the purpose of making salt from sea water have apparently not proved a commercial success. The Egyptian Salt and Soda Company have commenced to supply a good quality salt, which is deposited from the Wady Natron water at certain seasons of the year.

*Soda.*—According to the Fourth Annual Report of the Egyptian Salt and Soda Company, Ltd., 1904, arrangements have been made with the Egyptian Government which will enable the Company to utilise the natural alkali deposits of Wady Natron. Small quantities of the crude natron are sold to the natives.

*Stone.*—Sandstone and limestone are extensively quarried. Granite is obtained at Aswan, and basalt from quarries at Abu Zabel, near Cairo.

SOUDAN.‡

The possible mineral wealth of the Soudan is practically unknown. Gold mines were once worked in the mountains south of Fazogl. Iron ore is found in Bahr-el-Ghazal Province and also in Darfur.

Faroe Islands (see DENMARK).

Eritrea.§

Gold mines are being worked in this Colony by an Anglo-Italian Company. Salt is obtained by the evaporation of sea water, and also from the waters of Lake Assal, about 37 miles north-west of Gibuti.

Formosa.||

The Island of Formosa contains deposits of coal, gold, sulphur, and petroleum.

*Coal.*—In 1901 there were 73 collieries in the Kelung district, with a total output of 65,689 tons, valued at £25,332, and for the first half-year of 1902 the output was 51,163 tons, valued at £17,198. The exports in 1903 from Tamsui and Kelung were 21,947 tons, valued at £7,879, and in 1904, 30,002 tons, valued at £13,394.

*Gold.*—Three gold mines worked in the Kelung district yielded 1,632 ozs. in 1901. Gold in fair quantity is likewise obtained by washing the banks and bed of the

\* Fifth Annual Report of the Egyptian Mines Exploration Co., Ltd., London, 1906.

† "A Report on the Phosphate deposits of Egypt." *Geological Survey. Public Works Ministry*, Cairo, 1900.

‡ Despatch from H.M. Agent and Consul-General at Cairo, enclosing a Report on the Soudan by Sir W. Garstin, K.C.M.G.—Egypt, No. 5 (1899) [C. 9332].

§ Information furnished by the Chief Inspector of Mines, Rome.

|| Consul Layard, "Trade of North Formosa for the Year 1902," *Dipl. and Cons. Reports*, No. 3,054, Ann. Ser. [Cd. 1,386-131], 1903, pp. 14, 15; Acting-Consul Griffiths, "Trade of South Formosa for the Year 1903," *Dipl. and Cons. Reports*, No. 3,276, Ann. Ser. [Cd. 2236-20], 1904, p. 13; Acting-Consul Crowe, "Trade of North Formosa for the Year 1904," *Dipl. and Cons. Reports*, No. 3,405, Ann. Ser., 1905 [Cd. 2236-149], and Consul Wileman "Trade of the Consular District of Tainan (South Formosa) for the year 1904," *Dipl. and Cons. Reports*, No. 3,490, Ann. Ser., 1905 [Cd. 2682-15].



## FORMOSA—continued.

**Kelung river.** The total output from all the gold mines and from gold washing was 34,202 ozs. valued at £116,770 in 1901, and 48,400 ozs. valued at £168,226 in 1902.

**Salt.**—The export is a Government monopoly. The quantity exported in 1903 was 18,517 tons valued at £6,488, and in 1904, 29,714 tons valued at £72,901; the whole of this quantity was sent to Japan.

**Sulphur.**—If improved machinery were introduced the output of sulphur could be considerably increased. The quantity exported from Tamsui and Kelung in 1903 was 2,041 tons valued at £6,645, and for 1904, 2,088 tons valued at £6,716.

## France.\*

**Antimony.**—Sulphide of antimony is worked in five departments on the mainland and also in Corsica.

**Arsenic.**—Most of the arsenic is produced at the two mines of Villanière and Salsigne (Aude).

**Bauxite.**—Southern France possesses rich mines of bauxite; the most important workings are in the Department of the Var.

**Coal.**—The extraction of fossil fuel is the most important mining industry in France, for nearly 91 per cent. of the persons employed in and about mines in 1904 were workers at collieries. The output, including anthracite, amounted in 1904 to over 33½ million metric tons, or nearly three-quarters of a million tons less than in the preceding year. The value of the production exceeded 88 per cent. of the value of the total output of all the mines.

The two great coal-producing departments are the Pas-de-Calais and the Nord. The former yielded over 16 million metric tons, and the latter over 6 million; the two departments together produced more than 22 million metric tons, or 64·4 per cent. of the total output of the country. Next in importance is the Loire Basin with over 3·6 million metric tons. Borings for coal are being made at Saigneville, near Abbeville, in the Department of Somme.†

It is reported that new coalfields have lately been discovered in the neighbourhood of La Mure, in the Department of Rhône, and are about to be worked.‡

The total quantity of brown coal produced during the year 1904 amounted to 665,572 metric tons, or a decrease of 23,185 tons compared with the previous year.

The Department of the Somme is the principal seat of the peat industry, and it produced 34,000 tons, or 35·5 per cent. of the total output in 1904.

The Central Committee of French Coal Mines, in its year book for 1905,§ publishes much valuable information concerning the mines, together with a reprint of the laws affecting mines and mining.

**Copper ore.**—This mineral is worked in the Departments of Ariège, Savoie, Var, Alpes-Maritimes, and Aude.

**Iron ore.**—There are three main iron ore districts (1) the North-east, or Meurthe-et-Moselle, which yields over 6 million metric tons out of a total of 7 million; (2) the Pyrenees, which give nearly ¼ million tons; and (3) Normandy, with an output of 170,606 metric tons. Iron mining in Normandy is an industry of comparatively recent date. Its geographical position enables it to supply ore for export, whilst the other iron districts furnish ore for home consumption.

**Iron pyrites.**—Nearly all the iron pyrites is the produce of the Sain-Bel mines (Rhône).

**Lead ore.**—The principal lead mines are situated in the Departments of Gard, Ille-et-Vilaine, and Tarn.

**Manganese ore.**—Las Cabesses mine (Ariège), which produced carbonate of manganese, was not worked in 1904. Pyrolusite is obtained at the Romanèche and Grand-Filon mines (Saône-et-Loire). The output at these latter mines was 10,453 metric tons.

\* *Statistique de l'Industrie Minérale et des Appareils à Vapeur en France et en Algérie pour l'année 1904*, Paris, 1905, and information furnished by the French Government.

† Consul Payton, "Trade of Consular District of Calais for the year 1903." *Dipl. and Cons. Reports*, No. 3116, Ann. Ser. [Cd. 1766-80], 1904, p. 13.

‡ Consul Liddell, "Trade of Lyons, St. Etienne and Grenoble for the year 1904." *Dipl. and Cons. Reports*, No. 3409, Ann. Ser. [Cd. 2236-153], 1905.

§ *Comité Central des Houillères de France. Annuaire*, 1905. Paris, 1905.

FRANCE—continued.

*Phosphate of Lime.*—This mineral is worked in 18 departments, the Somme again heads the list with an output of 165,000 tons in 1904.

*Salt.*—Much of the salt comes from a thick bed of rock salt in the Upper Trias in the department of Meurthe-et-Moselle. The bay-salt is the result of the evaporation of sea-water in marshes on the shores of the Atlantic and the Mediterranean.

*Stone, &c.*—France produces very large quantities of useful stones, &c., employed for building purposes, in various manufactures, in agriculture, for paving and road making, and for ornamental purposes. Details concerning them are contained in the French Statistical Volume.

*Zinc ore.*—The two largest workings for zinc are those of Malines (Gard) and Bormettes (Var).

*Tin ore.*—The tin ore in 1904 was produced from Montebbras mine (Creuse).

TABLE 432.

PERSONS EMPLOYED at MINES, classified according to Ages, during the Years 1903 and 1904.\*

1903.

Kind of Mines.	Under-ground.				Above-ground.					Total Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	6,764	7,161	107,016	120,941	3,507	2,120	5,652	34,993	46,272	167,213
Other mines ... ..	70	196	11,285	11,551	175	258	368	4,165	4,966	16,517
Total ... ..	6,834	7,357	118,301	132,492	3,682	2,378	6,020	39,158	51,238	183,730

1904.

Kind of Mines.	Under-ground.				Above-ground.					Total Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	6,774	7,252	109,175	123,201	4,214	2,186	6,056	36,135	48,591	171,792
Other mines ... ..	64	191	11,984	12,239	234	272	364	4,396	5,266	17,505
Total ... ..	6,838	7,443	121,159	135,440	4,448	2,458	6,420	40,531	53,857	189,297

\* Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1903 and pour l'année 1904.

FRANCE—continued.

TABLE 435.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1903 and 1904.\*

Mineral.					1903.		1904.	
					Quantity.	Value.	Quantity.	Value.
					Metric Tons.	Francs.	Metric Tons.	Francs.
Aluminous earth	...	...	...	...	2,224	47,000	5,206	48,020
Amethyst	...	...	...	...	45	31,500	45	31,500
Barytes	...	...	...	...	5,731	90,457	6,944	79,301
Bauxite	...	...	...	...	133,890	1,175,120	75,640	679,945
Cement	...	...	...	...	898,363	22,352,059	903,632	22,350,492
Chalk	...	...	...	...	44,922	664,942	46,062	625,050
Clay	China clay	...	...	...	75,378	1,641,896	56,640	1,462,108
	Fireclay	...	...	...	253,460	1,679,367	220,409	1,539,705
	Potter's clay	...	...	...	4,734,924	6,343,550	4,968,936	7,043,502
	White clay for Stucco	...	...	...	350	18,850	350	18,550
Flagstone	...	...	...	...	62,855	1,434,082	54,472	1,220,666
Fluor spar	...	...	...	...	2,447	33,454	2,047	26,520
Fuller's earth	...	...	...	...	3,800	17,100	—	—
Gypsum	Plaster	...	...	...	1,468,830	15,121,959	1,481,303	14,416,260
	Manure	...	...	...	162,766	954,403	106,173	695,052
Lignite (Pyritiferous)	...	...	...	...	6,213	27,954	9,070	40,815
Lime	...	...	...	...	4,727,543	43,835,440	4,583,522	44,074,220
Lithographic stone	...	...	...	...	523	37,050	532	35,600
Marble	...	...	...	...	136,615	1,989,331	118,654	1,553,891
Marl	...	...	...	...	1,299,999	1,820,956	1,123,059	1,520,774
Millstones	...	...	...	...	35,031	1,561,044	37,409	1,709,405
Ochre	...	...	...	...	34,042	3,382,441	34,945	3,311,875
Onyx	...	...	...	...	2,626	114,446	1,780	61,765
Paving stone	...	...	...	...	577,554	10,294,439	568,943	9,010,792
Phosphate of lime	...	...	...	...	475,783	10,961,903	423,521	9,895,642
Sand, gravel, and flint	...	...	...	...	5,328,905	9,421,120	4,873,971	8,745,997
Slate	Roofing	...	...	...	382,461	23,964,934	382,435	25,038,217
	Slabs	...	...	...	1,404	206,250	2,136	316,674
Steatite, talc, and asbestos	...	...	...	...	18,568	570,284	21,052	666,795

\* Statistique de l'Industrie Mini rale en France et en Alg rie, pour l'ann e 1903, and pour l'ann e 1904.



FRANCE—continued.

The following figures show that the death-rate from accidents at coal mines per 1,000 persons employed below ground in France which dropped from 1·62 in 1900 to 1·19 in 1903 has slightly risen in 1904 :—

1896	...	...	1·62 per 1,000.	1901	...	...	1·40, per 1,000.
1897	...	...	1·34 „	1902	...	...	1·27 „
1898	...	...	1·26 „	1903	...	...	1·19 „
1899	...	...	1·62 „	1904	...	...	1·24 „
1900	...	...	1·62 „				

French Guiana.\*

Gold mining is the only mineral industry of any importance in the French Colony. The districts where alluvial mining is principally carried on are Maroni and Mana. There is only one quartz mine successfully working at the present time, viz., that belonging to the Société Anonyme of St. Elie, situated in the Sinnamary district.

An attempt has been made at gold dredging, but the results so far have not been very satisfactory.

In 1903, 7,769 tons of phosphate of lime, valued at 311,000 francs (£12,440), were exported.

Prospecting for diamonds is being undertaken by a local syndicate.

The output of gold in 1904 was 3,437 kilos., or a decrease of 888 kilos. compared with the previous year.

TABLE 438.

QUANTITY of GOLD produced in 1903 and 1904.

1903.		1904.	
Gold.		Gold.	
Quantity.	Value.	Quantity.	Value.
Kilos. 4,325	{ Francs 11,709,400 £ sterling 468,376	Kilos. 3,437	{ Francs 9,280,000 £ sterling 371,200

French Possessions (See ALGERIA, FRENCH GUIANA, INDO-CHINA, IVORY COAST, MADAGASCAR, NEW CALEDONIA, SENEGAL, and TUNIS).

German East Africa.†

There is little progress to record during 1903–04 in mining within this Protectorate : the number of prospecting licences issued decreased. The total value of the mineral (including gold) exported in the year amounted to £1,017.

*Coal.*—There is a large coal bed in Songwe at the north end of Lake Nyassa ; it is not worked, as wood is at present a cheaper fuel for the steamers.

*Gems.*—Garnets are plentiful and £2,750 worth were exported in 1900–01.

*Gold.*—Prospecting is going on in the Irambi and Muanza districts ; in the latter gold-bearing quartz veins have been discovered. The value of the gold exported in 1904 was £608.

*Salt.*—Brine springs at Mlagarassi, Lake Nyassa, produce good salt.

\* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année, 1903, and pour l'année, 1904* ; Acting Vice-Consul Fourrage, "Trade of French Guiana for 1902." *Dipl. and Cons. Reports*, No. 3106, Ann. Ser. [Cd. 1766-40], London, 1903, pp. 4–6 ; *Annuaire Statistique*, Vol. 24, 1904, Paris, 1905, p. 371 ; and information furnished by Consul Piggott to the Foreign Office in February, 1905.

† Vice-Consul Dundas, "Report on German East Africa for the year 1901." *Dipl. and Cons. Reports*, No. 2819, Ann. Ser. [Cd. 786-123], London, 1902 ; Buchanan, "German Colonies for the year 1901–2." *Dipl. and Cons. Reports*, No. 2983, Ann. Ser. [Cd. 1336-60], 1903 ; Whitehead, "German Colonies for the year 1902–3." *Dipl. and Cons. Reports*, No. 3296, Ann. Ser. [Cd. 2236-40], 1904 ; and Whitehead. *op. cit.*, for 1903–04, No. 3519 [Cd. 2682-44], 1905.

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1899	...	...	1·62 "	1904	...	...	1·24 "
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† Vice-Consul Dundas, "Report on German East Africa for the year 1901." *Dipl. and Cons. Reports*, No. 2819, Ann. Ser. [Cd. 786-123], London, 1902 ; Buchanan, "German Colonies for the year 1901–2." *Dipl. and Cons. Reports*, No. 2983, Ann. Ser. [Cd. 1336-60], 1903 ; Whitehead, "German Colonies for the year 1902–3." *Dipl. and Cons. Reports*, No. 3296, Ann. Ser. [Cd. 2236-40], 1904 ; and Whitehead, *op. cit.*, for 1903–04, No. 3519 [Cd. 2682-44], 1905.



### German Empire.

The following tables relating to the mining industry of the German empire show that in 1904 its mines employed 646,968 persons, and produced nearly 169½ million metric tons of coal and brown coal, and over 15½ million tons of iron ore, besides other minerals. The progress of mining during the last 33 years has been enormous. In 1871 the total value of minerals raised was rather more than £15,000,000 sterling; in 1904 it reached £67,531,100 sterling. This rise is largely due to the increased output of coal.

*Amber.\**—The shores of the Baltic have been the principal amber-yielding region of the world for many centuries. The industry in 1904 is reported to have been in a very flourishing state, the demand for amber having exceeded the supply. 166 tons were exported from Königsberg during the year.

*Brown Coal.†*—Deposits of brown coal are found in more or less abundance over nearly the whole of North Germany, but the principal brown coalfields are situated in Central Northern Germany, lying between Halle and Magdeburg in a direction from north to south, and between Brunswick and Frankfort on the Oder in a direction from west to east, and branching into the Kingdom of Saxony and also Lausitz. Another important brown coal deposit is that of "Vorgebirge," near Cologne, in the Rhine province, which differs from that of Central Germany in that it consists of a large continuous bed extending about 25 kilometres (15½ miles) from north to south with an average width of 6 kilometres (3¾ miles). The estimated quantity of brown coal available in the Rhenish district is stated to be about 3,500,000,000 tons. The manufacture of briquettes and other patent fuel, which amounted to 11,413,467 tons in 1904, is of great value to the brown coal industry.

*Coal.*—There are three principal coal-mining districts in Prussia: (1) The Lower Rhine and Westphalian Basin, which is by far the most important; (2) Silesia, and especially Upper Silesia; (3) the Rhenish district in the neighbourhood of Saarbrücken and Aix-la-Chapelle. Most of the coal is derived from seams of true Carboniferous age; near Hanover there are extensive workings in the Wealden beds.

The figures in Table 441 show that the output of coal in 1904 reached 120,815,503 metric tons, or an increase of over 4 million tons compared with that of 1903.

The exports of coal from Germany amounted to 18,019,000 metric tons, and of coke to 2,717,000 tons in 1904.‡

*Copper.*—The bulk of the copper is obtained by the large and important Mansfeld Company from a thin bed of cupriferous shale, which at the same time is silver-bearing.

*Iron Ore.*—Veins in the Siegen district and in the Duchy of Nassau yield spathose ore, brown iron ore, and hæmatite rich in manganese. These sources of supply are, however, of far less importance than the stratified ore of Jurassic age in Luxemburg and Lorraine. Indeed, the iron-field upon the confines of France and Germany is at the present moment the greatest ore-producer of Europe. It is estimated that Luxemburg possesses 14 sq. m. (37 sq. km.), Germany 160 sq. m. (414 sq. km.), and France 208 sq. m. (540 sq. km.) of iron territory, in which ore can be raised at a profit. The so-called "iron-ore formation" consists of five main beds of oolitic iron ore interstratified with marl and limestone, with an average thickness of 105 ft. (32 m.), of which rather more than one-half is available iron ore. The ore contains on an average 36 per cent. of iron and 1·7 per cent of phosphoric acid.§

In 1904 the output increased by 478,984 metric tons, or about 3 per cent. on that of the previous year.

*Lead Ore.*—The lead ore comes chiefly from Upper Silesia, the Hartz, and Rhenish Prussia.

*Salts.*—In no country in the world is there such an abundance of potassium salts as in Germany. They are mined in the province of Prussian Saxony and the Duchy of Anhalt; of late years Hanover has had a share in the production of these important and not very widely spread minerals. Common salt and potassium chloride are likewise obtained in considerable quantities by evaporation of solutions pumped up from boreholes.

*Zinc Ore.*—Upper Silesia is the mainstay of the German zinc industry.

\* Dahms "Vorkommen und Verwendung des Bernsteins." *Zeitschr. f. p. Geologie*, Vol. IX., 1901, p. 201, and Consul Brookfield, "Trade of the Consular District of Dantzig for the Year 1904." *Dipl. and Cons. Reports*, No. 3451, Ann. Ser. [Cd. 2236-195], 1905.

† Report to the Foreign Office by Consul Niessen, of Cologne, on the Brown Coal Industry, dated 4th March, 1905.

‡ Consul-General Schwabach, "Trade of Germany for the year 1904." *Dipl. and Cons. Reports*, No. 3333 and 3390, Ann. Ser. [Cd. 2236-77 and 2236-134], 1905, and *Vierteljahrshefte zur Statistik des Deutschen Reichs*. Jahrgang, 1905, Berlin IV. Heft.

§ Hoffmann, "Das Vorkommen der oolithischen Eisenärze (Minette) in Luxemburg und Lothringen." *Abhandl.*, Vol. XXXV., 1899, p. 640.





## GERMAN EMPIRE—continued.

TABLE 440.

PERSONS EMPLOYED at WELLS producing BRINE or other MINERAL SOLUTIONS during the Years 1903 and 1904.\*

Mineral Solution.	1903.			1904.		
	Men.	Women.	Total.	Men.	Women.	Total.
Sodium chloride ... ..	3,483	21	3,504	3,566	20	3,586
Potassium chloride ... ..	4,355	29	4,384	4,719	35	4,754
Sulphates or chlorides of sodium, potassium, magnesium, or aluminium.	729	13	742	769	14	783
Total ... ..	8,567	63	8,630	9,054	69	9,123

For persons employed at quarries, see page 424.

TABLE 441.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1903 and 1904.\*

Mineral.	1903.		1904.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
I.—COALS, ASPHALT, &c.				
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Asphalt ... ..	87,454	812	91,736	891
Brown coal ... ..	45,819,488	107,412	48,635,080	112,101
Coal ... ..	116,637,765	1,005,153	120,815,503	1,033,861
Graphite ... ..	3,720	149	3,784	169
Petroleum ... ..	62,680	4,334	89,620	5,805
Total value ... ..	—	1,117,860	—	1,152,827
II.—SALTS.				
Boracite ... ..	159	20	135	20
Kainite ... ..	1,557,243	21,883	1,905,893	26,565
Magnesium salts ... ..	559	4	695	6
Potassium salts, other than kainite ...	2,073,720	20,981	2,179,471	22,294
Rock salt ... ..	1,095,541	5,056	1,079,868	5,013
Total value ... ..	—	47,944	—	53,898
III.—ORES.				
Arsenic ore ... ..	4,369	331	4,390	324
Cobalt, nickel, and bismuth ores ...	14,607	819	14,016	930
Copper ore ... ..	772,695	20,449	798,214	21,731
Iron ore ... ..	15,220,638	62,011	15,699,622	63,501
Iron pyrites ... ..	170,867	1,319	174,782	1,336
Lead ore ... ..	165,991	14,084	164,440	14,706

\* Vierteljahrshefte zur Statistik des Deutschen Reichs; Jahrgang, 1905, Berlin, IV. Heft.

## GERMAN EMPIRE—continued.

TABLE 441—continued.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1903 and 1904—continued.

Mineral.	1903.		1904.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
III.—ORES—cont.	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Manganese ore ... ..	47,994	520	52,886	591
Silver and gold ores ... ..	11,467	1,245	10,405	1,206
Tin ore ... ..	110	57	99	53
Uranium and tungsten ores ... ..	35	21	23	33
Vitriol and alum ores, other than iron pyrites.	1,110	8	770	7
Zinc ore ... ..	682,853	33,058	715,728	39,479
Total value ... ..	—	133,922	—	143,897
Total value for the German Empire in marks.	—	1,299,726	—	1,350,622
Total value for the German Empire in £ sterling.	—	£64,986,300	—	£67,531,100
Grand Duchy of Luxemburg—iron ore	6,010,012	12,224	6,347,771	13,167

TABLE 442.

QUANTITY and VALUE of MINERALS produced from BRINE, &c. WELLS during the Years 1903 and 1904.\*

Mineral Solution.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks	Metric Tons.	1,000 Marks.
1. Alkaline sulphates :—				
(a.) Potassium sulphate... ..	36,674	5,838	43,958	6,994
(b.) Potassium and magnesium sulphate.	23,631	1,854	29,285	2,294
(c.) Sodium sulphate ... ..	83,087	2,118	75,170	1,924
2. Earthy sulphates :—				
(a.) Aluminium sulphate ... ..	49,727	3,271	55,881	3,474
(b.) Alum... ..	3,934	415	3,849	423
3. Magnesium chloride ... ..	22,990	434	25,730	539
4. Magnesium sulphate ... ..	37,844	629	39,412	607
6. Potassium chloride ... ..	280,248	34,140	297,238	35,402
6. Salt (sodium chloride) ... ..	598,394	14,184	621,786	14,706
Total value in marks ... ..	—	62,883	—	66,363
„ „ £ sterling ... ..	—	£3,144,150	—	£3,318,150

\* Vierteljahrshefte zur Statistik des Deutschen Reichs; Jahrgang, 1905, Berlin, IV. Heft.



GERMAN EMPIRE—continued.

TABLE 446.  
Iron Ore.

State.	1903.*		1904.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Alsace-Lorraine ... ..	10,683,042	28,130	11,135,042	29,704
Bavaria ... ..	162,500	757	180,342	1,587
Brunswick ... ..	213,781	363	219,933	476
Hesse ... ..	207,695	1,641	229,243	1,830
Prussia ... ..	3,786,743	30,412	3,757,651	29,169
Saxe-Meiningen ... ..	113,148	438	113,102	428
Waldeck... ..	32,665	164	30,504	153
Other German States ... ..	21,064	106	33,805	154
Total value in marks... ..	15,220,638 }	62,011	15,699,622 }	63,501
" " £ sterling ... ..		£3,100,550		£3,175,050
Grand Duchy of Luxemburg ... ..	6,010,012 }	12,224	6,347,771 }	13,167
		£611,200		£658,350

TABLE 447.  
Silver and Gold Ores.

State.	1903.*		1904.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Total quantity and value in marks for German Empire ... ..	11,467 }	1,245	10,405‡ }	1,206
" " " £ sterling ... ..		£62,250		£60,300

According to a return§ of the mining branch of the great industrial insurance institution of the German Empire, which numbers more than half a million members, the deaths from accidents among persons employed in and about mines and smelting works have been as follows :—

TABLE 448.  
DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS in GERMANY.

Year.	Deaths which occurred in the same year as the accident.		Total Deaths, including those which took place after the close of the year in which the accident happened.	
	Number of Deaths.	Number of Deaths per 1,000 Persons Insured.	Number of Deaths.	Number of Deaths per 1,000 Persons Insured.
1895	912	2·12	966	2·24
1896	971	2·18	1,027	2·30
1897	961	2·05	1,008	2·15
1898	1,254	2·53	1,301	2·63
1899	1,060	2·03	1,107	2·12
1900	1,145	2·02	1,197	2·12
1901	1,289	2·12	1,331	2·19
1902	1,080	1·80	1,121	1·86
1903	1,159	1·87	1,177	1·90
1904	1,178	1·83	—	—

\* Vierteljahrshefte zur Statistik des Deutschen Reichs ; Jahrgang, 1904, Berlin, 1V. Heft.  
† 1905  
‡ 97 kilos. of fine gold and 180,735 kilos. of fine silver were extracted from these ores at the Metallurgical Works in 1904.  
§ Zwanzigster Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1904, Berlin, p. 41.

GERMAN EMPIRE—continued.

TABLE 449.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1904.\*

Kind of Workings.	Average Number of Persons Insured.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Insured.
		Males.	Females.	Total.	
Brown coal mines ... ..	56,500	138	1	139	2.46
Coal mines ... ..	477,937	893	2	895	1.87
Ore mines and smelting works ...	77,841	84	—	84	1.08
Salt mines and brine works ... ..	23,188	50	—	50	2.16
Other mineral workings ... ..	7,060	10	—	10	1.42
Total ... ..	642,526	1,175	3	1,178	1.83

TABLE 450.

ACCIDENTS CLASSIFIED so as to show whether they were due to the WORKMEN'S NEGLIGENCE, Year 1904.†

Section.	Accidents.								Total Number of Accidents.
	Owing to Danger Inherent to the Work itself.		By Defects in the Working.		Through Fault of Fellow Workman.		Through Fault of Injured Person.		
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
1. Bonn ... ..	1,167	71.33	5	0.31	38	2.32	426	26.04	1,636
2. Bochum ... ..	3,851	83.82	12	0.26	100	2.18	631	13.74	4,594
3. Clausthal ... ..	167	63.02	1	0.38	9	3.40	38	33.21	265
4. Halle ... ..	376	40.65	42	4.54	76	8.22	431	46.59	925
5. Waldenburg ... ..	157	80.51	2	1.03	7	3.59	29	14.87	195
6. Tarnowitz ... ..	668	35.99	34	1.83	93	5.01	1,061	57.17	1,856
7. Zwickau ... ..	241	68.08	3	0.85	16	4.52	94	26.55	354
8. Munich ... ..	101	80.80	1	0.80	2	1.60	21	16.80	125
Total ... ..	6,728	67.62	100	1.01	341	3.43	2,781	27.94	9,950

The main result of this table is that nearly 28 per cent. of the accidents were due to the carelessness of the persons injured. Last year the percentage was 29.

\* *Neunzehnter Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1904*, Berlin, 1905 pp. 58-61.  
† *Ibid.*, p. 41.

GERMAN EMPIRE—continued.  
TABLE 451.  
PERSONS INJURED BY ACCIDENTS IN AND ABOUT QUARRIES, WHO RECEIVED COMPENSATION DURING THE 10 YEARS 1895 TO 1904.\*

1. Year	(a) Number, Age, and Sex of Persons Injured.						8 Per 1,000 Persons Insured.	(b) Cause of Accident.													(c) Consequence of the Injury.																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	Adults.			Young Persons Under 16.				Total.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7.	8 Per 1,000 Persons Insured.	9.	F.	M.	5.	6.	7

\* *Verwaltungs-Bericht des Vorstandes der Steinbruchs-Berufsgenossenschaft für das XIX. Rechnungsjahr 1904*, Berlin, 1905, p. 8.  
The figures in Column 2 represent the total number of persons employed in a quarry at any time during the year for however short a period. The number of persons employed full time, reckoning 300 days' work a year for each person, is given as 152,410 in 1903 and 158,261 in 1904.  
The number of deaths in column 23 represents the number of cases in which compensation had been paid by the Insurance Board during the year, and differs slightly from the number reported as occurring during the year, which is stated as 234 in 1903 and 209 in 1904.  
The death-rate of the full time (300 days) workers was 1.6 for 1903 and 1.3 for 1904.



Separate statistics have been obtained for the following States, forming parts of the German Empire, viz., Bavaria, Prussia, and Saxony.

BAVARIA.\*

TABLE 452.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1903 and 1904.

Kind of Mines or Mineral Workings.	1903.		1904.		Kind of Mines or Mineral Workings.	1903.		1904.	
	Men.	Women and Children.	Men.	Women and Children.		Men.	Women and Children.	Men.	Women and Children.
Barytes ...	118	358	144	288	Melaphyre...	1,878	4,686	1,779	4,111
Basalt ...	1,003	2,591	1,104	3,076	Ochre, &c. ...	146	214	119	244
Brown coal ...	180	347	263	614	Paving stones ...	336	390	451	399
Cement marl ...	258	457	376	657	Petroleum...	—	—	30	—
Coal ...	7,820	15,772	7,747	16,405	Porcelain earth ...	145	160	147	141
Copper ore ...	4	—	13	26	Salt, rock ...	92	156	120	203
Emery ...	6	22	6	27	„ from brine ...	218	709	233	683
Feldspar ...	36	110	32	61	Sand ...	132	380	285	400
Fireclay ...	608	1,561	651	1,473	Sandstone ...	3,711	7,886	3,733	8,610
Fluorspar ...	32	105	34	108	Slates (roofing and slabs).	136	339	84	208
Granite ...	3,620	7,289	3,848	7,713	Steatite ...	70	226	71	213
Graphite ...	128	25	242	338	Whetstone ...	8	2	11	1
Gypsum ...	90	194	40	74	Zinc and Lead ...	2	—	—	—
Iron ore ...	785	2,130	849	2,298					
Iron pyrites ...	40	107	44	121					
Limestone ...	1,491	2,071	1,848	3,723					
Lithographic stone	451	276	570	225	Total ...	23,494	48,563	24,874	52,440

TABLE 453.

QUANTITY and VALUE of MINERALS obtained during the Years 1903 and 1904.

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes ...	8,642	56,730	9,411	59,912
Basalt ...	634,115	1,232,624	713,687	1,240,422
Brown coal ...	23,599	87,397	42,470	138,875
Cement marl ...	200,407	347,482	170,698	263,176
Coal ...	1,210,440	13,664,199	1,184,599	13,621,538
Emery ...	220	9,800	265	11,725
Feldspar ...	1,060	13,040	1,866	22,540
Fireclay...	173,919	1,387,765	173,126	1,209,926
Fluorspar ...	3,410	40,270	4,770	45,820
Granite ...	255,494	2,128,478	325,923	2,050,807
Graphite ...	3,719	148,784	3,784	168,581

\* Übersicht der Produktion des Bergwerks-Hütten-u. Salinenbetriebes im Bayerischen Staate für das Jahr 1904.

GERMAN EMPIRE.—BAVARIA—continued.

TABLE 453—continued.

QUANTITY and VALUE of MINERALS obtained during the Years 1903 and 1904—cont.

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Gypsum... ..	30,894	80,443	22,766	72,719
Iron ore... ..	162,500	756,854	180,342	1,587,019
„ pyrites ... ..	2,324	28,789	3,427	44,800
Limestone ... ..	730,279	1,244,648	824,971	1,544,601
Lithographic stone ... ..	9,890	848,600	13,836	1,711,400
Melaphyre, &c. ... ..	604,068	1,254,455	573,748	1,396,525
Ochre, &c. ... ..	19,486	223,913	19,107	110,419
Paving stones ... ..	8,790	152,452	12,958	247,977
Porcelain earth ... ..	88,140	169,790	95,160	95,160
Salt, rock ... ..	879	16,560	1,139	21,454
„ from brine ... ..	41,782	1,871,441	43,048	1,930,168
Sand ... ..	155,921	222,406	274,346	412,933
Sandstone ... ..	542,110	2,917,619	576,561	2,932,899
Slates (roofing and slabs) ... ..	2,074	89,642	1,486	75,434
Steatite ... ..	1,866	165,150	1,709	159,494
Whetstone ... ..	83	4,170	50	2,500
Total value in Marks ... ..	{ — }	29,163,501	{ — }	31,178,824
„ „ £ sterling ... ..		£1,458,175		£1,558,941

PRUSSIA.

TABLE 454.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1903 and 1904.\*

Kind of Mines or other Mineral Workings.	1904.				Total for preceding year.
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal ... ..	14,802	10,714	17,781	43,297	43,211
Coal ... ..	340,442	—	108,718	449,160	429,837
Ore... ..	43,402	1,570	21,852	66,824	65,766
Other mineral workings ... ..	9,336	1,617	10,448	21,401	19,338
Total ... ..	407,982	13,901	158,799	580,682	558,152

\* Zeitschr. B. H. S. W., Vol. LIII., p. 48.







GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 456.

QUANTITY and VALUE of SALTS obtained from BRINE WELLS, &c. during the Years 1903 and 1904.

Description of the Product.	1903.*					1904.†				
	Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.		Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.	
	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By-product.		Quantity.	Value.	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By-product.		Quantity.	Value.
1. Alkaline Sulphates:—			Metric Tons.	Metric Tons.	Marks.			Metric Tons.	Metric Tons.	Marks.
(a) Potassium sulphate ..	1	10	120,600	25,211	4,094,005	2	12	104,050	30,261	4,837,540
(b) Potassium and magnesium sulphate.	—	9	31,237	15,790	1,264,860	—	11	25,577	13,326	1,500,136
(c) Sodium sulphate ..	9	7	41,838	68,310	1,668,285	9	7	38,938	61,097	1,520,153
2. Earthy Sulphates:—										
(a) Aluminium sulphate..	3	1	10,940	12,134	791,888	3	1	11,554	13,216	739,683
(b) Alum .. .. .	1	1	1,073	1,500	163,657	1	1	970	1,308	150,737
3. Magnesium chloride ..	—	4	20	10,699	263,183	—	4	20	13,161	362,797
4. Magnesium sulphate ..	—	8	3,885	21,048	393,529	—	7	35	22,304	366,123
5. Potassium chloride ..	16	3	1,044,230	168,883	31,045,814	16	4	1,126,435	183,694	32,937,400
6. Salt (sodium chloride) ..	35	4	97,168	317,475	8,611,806	34	4	108,949	328,933	8,808,492
Total .. .. .	65	47	1,851,011	641,110	38,260,832 £1,813,342	68	51	1,416,534	672,700	38,323,054 £1,926,153

TABLE 457.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1904 and preceding Year.‡

Kind of Mines or other Mineral Workings.	1904.				Total for preceding year.
	Number of Deaths.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal ... ..	38	13	35	86	83
Coal ... ..	695	—	113	808	824
Ore ... ..	50	1	10	61	68
Other mineral workings ... ..	32	—	3	35	29
Total ... ..	815	14	161	990	1,006

\* Zeitschr. B. H. S. W., Vol. LII., p. 21.  
† " " Vol. LIII., p. 21.  
‡ " " Vol. LIII., p. 51.

GERMAN EMPIRE.—PRUSSIA—*continued.*

TABLE 458.

DEATH-RATES from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1904 and preceding Year.\*

Kind of Mines or other Mineral Workings.	1904.				Total for preceding year.
	Death-rate per 1,000 Persons Employed.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal ... ..	2.57	1.21	1.97	1.99	1.92
Coal ... ..	2.04	—	1.04	1.80	1.92
Ore ... ..	1.52	.64	.46	.91	1.03
Other mineral workings ... ..	3.43	—	.29	1.63	1.50
Total ... ..	2.00	1.01	1.01	1.70	1.80

TABLE 459.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS, classified according to kind of MINERAL WORKED, and cause of ACCIDENT, during the Year 1904, and the DEATH-RATES for 1903 and 1904.†

Cause of Accident.	Deaths from Accidents.					Death-rate per 1,000 Persons Employed.	
	Brown Coal Mines.	Coal Mines.	Ore Mines.	Other Mineral Workings.	Total.	1904.	1903.
Blasting ...	—	30	5	—	35	.86	.13
Falls of ground ...	23	301	29	3	356	.87	1.01
On inclines and in intermediate shafts. }	3	141	3	—	147	.36	.30
In shafts ...	4	99	9	8	120	.29	.28
In levels ...	2	48	1	1	52	.13	.13
Explosion of fire-damp, coal dust, or gases generated by fires. }	—	19	—	14	33	.08	.09
Suffocation by natural gases (with out explosion), or gases generated by fires (without explosion), or blasting. }	2	8	—	4	14	.03	.04
Machinery... ..	—	3	—	—	3	.01	.01
Irruptions of water	4	1	—	—	5	.01	.01
In open workings	13	—	1	—	14	1.01	1.40
On surface... ..	35	113	10	3	161	1.01	.92
Sundries ... ..	—	45	3	2	50	.12	.15
Total ... ..	86	808	61	35	990	1.71	1.80

\* Zeitschr. B. H. S. W., Vol. LIII., p. 51.

† " " " " pp. 48-51.

GERMAN EMPIRE.—PRUSSIA—continued.

The three worst accidents\* of the year were as follows :—

TABLE 460.

Name of Mine.	No. of Persons Killed.	Cause.
Frisch-Glück ... ..	12	Explosion of fire-damp.
Cons. Schlesien Colliery ... ..	8	„ coal dust.
General Blumenthal (Shaft V.) Colliery	8	Collapse of walling stage in shaft.

The explosion of fire-damp by which 12 men were killed happened in a potassium salt mine.

Two cases of suffocation by fire-damp were recorded in 1904.

TABLE 461.

EXPLOSIONS of FIRE-DAMP or COAL DUST classified according to CAUSE.†

Cause.		1903.			1904.		
		Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.	Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.
I. Lighting	1. Naked lights ...	—	—	—	—	2	2
	2. Matches or smoking	—	—	—	1	1	2
	3. Illegally opened ...	—	—	—	1	—	1
	4. In defective condition or injured during work.	2	10	12	3	6	9
	5. Gauze becoming red hot.	—	2	2	—	—	—
	6. Oil or soot on gauze taking fire	—	—	—	—	—	—
	7. Passage of flame when relighting by amorces.	—	—	—	—	—	—
	8. Flame driven through gauze by ventilating current:						
	(a) In consequence of careless handling of lamp.	3	4	7	1	4	5
	(b) In consequence of the ventilating current being too rapid.	1	—	1	—	—	—
	(c) Miscellaneous ...	1	1	2	—	2	2
II. Shot firing ...	9. ... ..	—	4	4	1	10	11

\* Zeitschr. B. H. S. W., Vol. LIII., p. 47.  
† " " Vol. LIII., p. 65,



GERMAN EMPIRE.—PRUSSIA—*continued.*TABLE 461—*continued.*

Cause.		1903.			1904.		
		Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.	Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.
III. Underground fires.	10. Ventilating furnaces	—	—	—	—	—	—
	11. Accidental or spontaneous ignition of mineral, timber, or other material.	1	—	1	1	1	2
IV. Miscellaneous	12. Sparks from tools ...	—	—	—	—	—	—
	13. Sundries or unknown	1	—	1	1	—	1
Total ... ..		9*	21	30	9†	26	35

## SAXONY.‡

TABLE 462.

PERSONS EMPLOYED at MINES during the Years 1903 and 1904.

Kind of Mines.				1903			1904.		
				Males.	Females.	Total.	Males.	Females.	Total.
Brown coal	...	...	...	3,310	143	3,453	3,410	131	3,541
Coal	...	...	...	25,352	326	25,678	25,304	299	25,603
Ore	...	...	...	3,303	—	3,303	3,161	1	3,162
Total	...	...	...	31,965	469	32,434	31,875	431	32,306

According to the Saxon Year-book, 80,600 persons were dependent upon the 32,306 workers in and about mines in 1904.

TABLE 463.

QUANTITY and VALUE of MINERALS obtained during the Years 1903 and 1904.

Mineral.		1903.		1904.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes	...	158	1,638	144	1,680
Bismuth, cobalt, and nickel ores	...	467	619,485	441	685,530
Brown coal	...	1,839,422	4,597,306	1,922,096	4,814,154
Coal	...	4,450,111	51,374,098	4,475,107	50,826,322

\* Causing 14 deaths, *Op. cit.*, Vol. LII., pp. 59 and 60.

† " " " " Vol. LIII., p. 60.

‡ *Jahrbuch für das Berg- und Hüttenwesen im Königreiche Sachsen, Jahrgang 1904, Freiberg, pp. B65, 67, and 194.*

## GERMAN EMPIRE—continued.

TABLE 463.—continued.

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Fluor spar ... ..	2,262	16,617	3,023	22,294
Iron ore ... ..	88	756	217	1,732
Limestone, &c. ... ..	—	31,864	—	27,918
Manganese ore ... ..	—	—	1	30
Ochre and amber ... ..	50	1,600	4	150
Pyrites (arsenical, iron and copper)...	9,908	119,927	8,700	105,517
Quartz, mica, and uranium ore ...	7	563	15	734
Silver ore ... ..	11,568	1,146,356	10,621	1,107,419
Tin ore ... ..	110	70,019	99	70,277
Wolfram ... ..	35	21,456	23	32,522
Zinc ore ... ..	182	4,079	66	1,819
Specimens ... ..	—	2,960	—	5,676
Total value in marks ...	—	58,008,724	—	57,703,774
" " „ £ sterling ...	—	£2,900,436	—	£2,885,189

TABLE 464.

DEATHS and DEATH-RATES from ACCIDENTS at MINES during the Years 1903 and 1904.

Kind of Mines.	Deaths from Accidents.		Death-rate* per 1,000 Persons Employed.	
	1903.	1904.	1903.	1904.
Brown coal ... ..	11	12	3.24	3.50
Coal ... ..	22	24	.87	.95
Ore ... ..	1	1	.31	.32
Total and average ... ..	34	37	1.06	1.16

\* In calculating the death-rate the persons employed in commercial work above ground, numbering 367 in 1904, are excluded.



## German South-West Africa.\*

Large deposits of copper ore have been proved to exist in the Otavi district, and the mineral has also been discovered at Otyizongati, about 40 miles east of Okahandja. In 1904 about 100 tons of ore were sent as samples to Germany and yielded over 28 per cent. of metallic copper.

The Otavi Mining Company in 1904 received the assistance of the Government in the construction of their railway from Swakomund to the Otavi Mines, and considerable progress was made in the work, the line being completed as far as Omaruru during that year.

## Greece.

Greece is well supplied with numerous metallic ores, marble and other valuable minerals. The mining industry is improving, as the state revenue from this source, which in 1890 was only £67,234, amounted in 1904 to £506,221.† The mineral resources of the country are described at some length in a recent Consular report,‡ based upon descriptions given by Cordella.

*Chrome Ore.*—This mineral is principally worked in Thessaly; 6,350 tons valued at £8,800 were obtained and exported from Volo in 1904.§

*Emery.*—Naxos has long been famous for its emery; the trade in emery is a Government monopoly. The quantity exported from Syra in 1904 was 6,353 metric tons, valued at £27,064; 2,780 tons of this quantity were shipped to Rotterdam, and 1,203 tons to the United States.||

*Iron and Manganese.*—The ores of these two metals occur and are worked in the Laurium district, and in Grammatikon, Siphnos, Seriphos, Thermia and Milos. Large quantities of iron ore have recently been discovered. The deposits of iron ore in Seriphos occur in the west part of the island, and the amount exported therefrom in 1904 was 139,500 tons; the ore contains from 47 to 52 per cent. of metal.||

*Magnesite.*—Rich deposits of this mineral are a source of wealth to the Island of Eubœa.

*Marble.*—The marble industry of Greece is of considerable importance, and many of the quarries known to the ancients are being re-worked by English companies, viz., at Larissa and Pentelicon on the mainland, and in the islands of Skyros, Eubœa, and Tinos. One British Company (Mamor Limited), obtained over 5 million cubic metres of marble from its quarries in 1903, and over 3 million cubic metres in 1904.¶

*Salt.*—This is obtained from sea water at Anavyssos, near Laurium, and in the island of Leucados. The industry is a Government monopoly.

*Sulphur.*—Among other mineral products Milos supplies sulphur.

*Zinc.*—Calamine and blende occur with lead ore in the Laurium district.

\* Whitehead, "Report on the German Colonies for the Years 1903-04." *Dipl. and Cons. Reports*, No. 3,519, Ann. Ser., [Cd. 2682-44], London, 1905, p. 31.

† Harvey, "Finances, Economic Progress and Agriculture of Greece for the year 1904." *Dipl. and Cons. Reports*, No. 3,302, Ann. Ser. [Cd. 2236-46], 1904, p. 17.

‡ Bennett, "Report on the Mineral Resources of Greece." *Dipl. and Cons. Reports*, No. 576, Misc. Ser. [Cd. 787-12], London, 1902, with two maps.

§ Consul Merlin, "Trade and Agriculture of the Province of Thessaly for the year 1904." No. 3,361, Ann. Ser., 1905 [Cd. 2236-105], p. 4.

|| Consul Cottrell, "Trade of the Cyclades for the year 1904." *Dipl. and Cons. Reports*, No. 3,367, Ann. Ser., 1905 [Cd. 2236-111], p. 6.

¶ Consul Walsh, "Trade and Agriculture of Piræus and District for the year 1904." *Dipl. and Cons. Reports*, No. 3,370, Ann. Ser., 1905 [Cd. 2236-111].



GREECE—continued.

TABLE 465.

PERSONS EMPLOYED at MINES during the Years 1903 and 1904.\*

	Year.			Total Under and Above Ground.	
	1903	...	...		
	1904	...	...	10,200	

TABLE 466.

QUANTITY and VALUE of MINERALS produced during the Years 1903 and 1904.\*

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chromite ... ..	8,478	381,510	15,430	576,040
Emery ... ..	5,586	594,909	6,182	658,349
Gypsum... ..	94	8,225	393	6,910
Iron ore ... ..	531,804	4,786,236	413,688	2,900,888
Lead (argentiferous pig lead) ...	12,361	6,180,500	12,590	5,036,100
„ ore... ..	10,150	617,500	3,306	280,600
Lignite ... ..	8,687	80,687	10,000	92,000
Magnesite ... ..	25,657	513,140	35,989	994,600
Manganese ore ... ..	9,340	280,200	7,355	220,650
Millstones ... .. Pieces	11,000	34,000	12,744	22,670
Salt from sea water ... ..	26,000	520,000	27,000	540,000
Sulphur ... ..	1,266	151,920	569	91,040
Zinc ore ... ..	12,350	1,111,500	15,446	1,235,680
Total value in francs ... ..	—	15,260,327	—	12,655,527
„ „ „ £ sterling ... ..	—	£610,413	—	£500,221

There were 13 deaths from accidents at mines during the year 1903, equivalent to a death-rate of 1·28 per 1,000 persons employed.

Greenland. (See DENMARK.)

\* Official Return furnished by the Bureau of Mines, Athens.

## Guatemala.\*

Guatemala contains great wealth in its mineral deposits, which are distributed in different parts of the Republic. The following ores of antimony, copper, gold, iron, lead, manganese, silver and zinc are found, besides coal, lignite, graphite, gypsum, marble, mica, salt, sulphur, talc, and turquoises. A new road has recently been made into the heart of the mining region and several valuable mineral properties are being developed.

Hydraulic mining for gold is carried on at Las Quebradas, and the mines are reported to yield large profits to the owners.

Seams of Bituminous coal from 1 to 4 feet thick exist in many localities within a few miles of the Port of Livingston, but are not worked.

## Hayti.†

Coal has been found in various districts, and a little gold washing done in the North of the Island. Copper and Iron have been worked near Gonaïves, apparently with satisfactory results. 20 tons of copper were shipped in 1903, and 10 tons in 1904, principally from Port au Prince and Aux Cayes.

## Herzegovina. (See AUSTRIA-HUNGARY.)

## Holland.‡

Holland possesses immense peat bogs,§ which produce about 100 million hectolitres of good fuel annually. Since 1893 the turbaries have been further utilized for making peat litter. There are now nine factories producing it; they employ about 2,500 persons, and their total output is more than 220,000 tons of peat litter a year.

There are coal mines at Heerlen and Kerkrade||; and underground stone quarries are worked at Maastricht and Valkenberg.

TABLE 467.

PERSONS EMPLOYED at MINES during the Years 1903 and 1904.

Year.	Under-ground.			Above-ground.			Total Under-ground and Above-ground
	Males.	Females.	Total.	Males.	Females.	Total.	
1903    ...	1,519	—	1,519	570	—	570	2,089
1904    ...	1,585	—	1,585	577	—	577	2,162

\* Consul Hervey, "Trade, Finance and Agriculture of Guatemala for the Years 1902-1903." *Dipl. and Cons. Reports*, No. 3,238, Ann. Ser., 1904 [Cd. 1766-172], pp. 16 and 17, and *Ibid* for 1904 No. 3,469 [Cd 2236-213] 1905, p. 15.

† Consul-General Vansittart, "Trade and Finances of the Republic of Hayti and Santo Domingo for the Year 1904." *Dipl. and Cons. Reports*, No. 3,385, Ann. Ser., 1905 [Cd. 2236-129], p. 8.

‡ Official Returns furnished by the Government of the Netherlands.

§ Rommenhöller, *Mouvement du Commerce et de l'industrie des pays-Bas durant l'exercice 1898*. Rotterdam, 1899, p. 122.

|| Büttgenbach, "Die Geologie des alten Herzogthums Limburg." *B.N.h. Zeitung*, Vol. LVII., 1898, p. 363.

HOLLAND—continued.

TABLE 468.

PERSONS EMPLOYED at MINERAL WORKINGS other than MINES during the Years 1903 and 1904.

Year.	Under-ground.			Above-ground.			Total Number of Persons Employed in and about Mineral Workings other than Mines.
	Males.	Females.	Total.	Males.	Females.	Total.	
1903 ...	60	—	60	50	—	50	110
1904 ...	52	—	52	60	—	60	112

TABLE 469.

QUANTITY and VALUE of MINERALS produced during the Years 1903 and 1904.

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
		Florins.		Florins.
Building stone ... Cubic Metres	4,000	8,000	5,500	11,000
Coal ... Metric Tons	487,777	2,751,096	466,997	2,471,178
Total value in Florins ...	—	2,759,096	—	2,482,178
„ „ £ sterling ...	—	£229,925	—	£206,848

TABLE 470.

DEATHS from ACCIDENTS at MINES during the Years 1903 and 1904.

Year.	Under-ground			Above-ground.			Total Number of Deaths Under and Above Ground.	Death-rate per 1,000 Persons Employed.	
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Under and Above Ground.
1903	4	—	4	—	—	—	4	2·63	1·91
1904	3	—	3	—	—	—	3	1·89	1·39

There were no fatal accidents at the underground stone quarries in 1903 and 1904.



## Honduras.\*

It appears from the Consular report that the mining industry of the Republic does not advance very rapidly. Foreign labour and capital are needed, and some inducements should be held out to colonists by the Government in order to make the industry advantageous to the country. The exports of minerals during the two years ending 30th June, 1903 and 1904, respectively, were as follows:—

TABLE 471.

Mineral.	1903.	1904.
	Value.	Value.
	£	£
Copper ... ..	383	38
Gold ... ..	14,363	14,896
Lead (metal) ... ..	—	191
Salt ... ..	104	643
Silver { Bar ... ..	30,083	30,239
Coined ... ..	810	12,091
Ore (unspecified) ... ..	40,677	43,803

## Indo-China.

## ANNAM.

Annam and Tong-King possess large deposits of coal, iron ore, and argentiferous lead ore; besides having also asbestos, graphite, kaolin, and marble, and the ores of antimony, copper, gold, manganese, nickel, quicksilver, and tin.†

The average output of the Nong-son coal mines is at the rate of 100 tons a day.‡

Iron ore § is being smelted on a very small scale by the natives at Nho-Lam in the province of Quang-nam.

## COCHIN CHINA.||

6,200 kilograms of jet, valued at 12,400 francs, were obtained from mines in the island Phu-Quoc in the year 1895; but the mines do not appear to have been worked since, as no quantity is reported in the French statistics. In 1902, 28,766 tons of salt were exported.‡

## TONG-KING.¶ (See also ANNAM.)

The "Société Française des Charbonnages du Tonkin" produced 301,500 tons of coal, valued at 3,185,000 francs, and exported 184,649 tons in 1904. The Kebao Mines in 1903 produced 5,586 tons of coal, and the Schoedelin Mine about 5,000 tons. At the Hongay Mines, 3,000 persons were employed in 1903.

Some prospecting work for gold was carried on at the Moson Gold Mines in 1903-4, and gave employment to 40 Muongs and 250 Chinamen. Gold has been discovered to the south of the Pia-Ouac district in the region of the Ngan-son.

\* Consul Campbell, "Trade and Agriculture of Honduras for the year ended 30th June, 1904." *Dipl. and Cons. Reports*, No. 3,334, Ann. Ser., 1905 [Cd. 2236-78], pp. 4 and 8.

† *B.u.h. Zeitung*, Vol. LVIII., 1899, p. 292.

‡ Vice-Consul O'Connell, "Trade of Cochin China for the year 1903." *Dipl. and Cons. Reports*, No. 3,181, Ann. Ser., 1904. [Cd. 1766-115].

§ Consul Tremleff, "Trade of Saigon and District for the Year 1897." *Dipl. and Cons. Reports*, No. 2,060, Ann. Ser., 1898 [C. 8648-82].

|| *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1896*, p. 76.

¶ Return furnished by the French Government and published in *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1904*, p. 62, and *Op. Cit.* O'Connell, and Pearson "Trade of Indo-China for the years 1903-4." *Dipl. and Cons. Reports*, No. 3,528, Ann. Ser., 1905 [Cd. 2682-53].



INDO-CHINA.—TONG-KING—continued.

Copper of good quality is produced from the mines in the provinces of Sontay, Langson, and Laokay.

Iron mines are numerous and productive in the provinces of Hanoy, Thainguayen\* and Sontay.

Deposits of Nickel have been discovered in the province of Tuyenquang\*.

Tin and Wolfram have been found in the Pia-Quac district.

Italy.†

Some useful information concerning the mineral industries (especially Marble and Sulphur) of Italy is given in the catalogue of the exhibits shown by the Government at the St. Louis Exhibition of 1904. The nature of the principal kinds of mines and quarries may be briefly stated as follows:—

Sulphur is the most important mineral raised in the kingdom, and the bulk of it is obtained from Sicily. Next come zinc and lead ore; these are far more largely worked in Sardinia than in the peninsula itself. Again, in the case of iron ore, it is an island, Elba, which is the mainstay of the industry. England received only 3 per cent. of the Elban output in 1904, as against 37 per cent. in 1903, owing to the ore being required for local needs.‡ The marble quarries of the Apuan Alps have long been a source of wealth to the country.

The following are a few particulars concerning some of the minerals:—

*Alunite.*—Quarrying natural alum-stone is a very old industry in the Tolfa hills north-east of Civita Vecchia. The open workings have now given place to underground mining, but the total output at the present day amounts to only a few thousand tons annually, and most of it is exported to France and Germany.

*Asphalt.*—A large quantity of bituminous limestone is quarried at Ragusa Superiore in the province of Syracuse. The principal seam is from 13 feet to 20 feet (4 to 6 m.) in thickness, and contains from 16 to 50 per cent. of bitumen. Nearly 80,000 tons were exported from Sicily in 1904. Important discoveries of asphalt rock have recently been made at Scicli, in Sicily.§

*Boric Acid.*—The amount of boric acid produced from the natural steam-puffs (*soffioni*) in the provinces of Pisa and Grosseto varies from two to three thousand tons yearly.

*Coal.*—The development of the deposits of fossil fuel, which mineral is stated to be abundant in the provinces of Sieno and Grosseto, is hindered by the cheapness of imported coal from the United Kingdom.¶ The total output in 1904 was only 362,151 tons, of which 355,836 tons were lignite, 3,620 tons anthracite, and 2,695 tons bituminous shale. Most of the lignite came from Tuscany, and the anthracite from the provinces of Cagliari (Sardinia) and Turin.

*Copper.*—The principal mines are situated in the Massa Marittima district, in the province of Grosseto, in Tuscany. All the ore obtained is now smelted locally.‡

*Gold.*—The gold veins in the flanks of Monte Rosa in Turin were worked by the Romans, and still continue to supply small quantities of the precious metal.

*Granite.*—Piedmont boasts of excellent red granite and white granite, and the quarries at Baveno and Mont'Orfano on the Lago Maggiore are worked upon an extensive scale.

*Iron.*—‡The thick deposits of iron ore in the Island of Elba have been worked for many centuries, and are not yet exhausted. The ore is obtained in open quarries. The total output of 409,460 tons shows a substantial increase on the quantity obtained in 1903. The two blast furnaces erected at Portoferraio with the object of treating some of the second class ore on the spot are capable of producing 550 tons of pig iron daily. These furnaces, together with those at Piombino, smelt the whole of the Elban output of ore.

Important deposits of manganiferous iron ore exist at Monte Argentario, on the sea coast about 30 miles south of Elba, and arrangements are being made for smelting the ores on the spot. An abundance of peat of good quality is located in close proximity to the mines, which can be utilised with great advantage.

\* Consul Little, "Trade of Indo-China for the year 1902," *Dipl. and Cons. Reports*, No. 3117, Ann. Ser., 1904 [Cd. 1766-51].

† *Catalogo della Mostra fatta dal Corpo Reale delle Miniere all'Esposizione Universale di St. Louis nel 1904.* Rome, 1904.

‡ Vice-Consul Tonietti, "Trade of Elba for the years 1902-03," *Dipl. and Cons. Reports*, No. 3319, Ann. Ser., 1904 [Cd. 2236-63], p. 4.; and Consul-General Chapman, "Mineral Wealth of the Provinces of Siena and Grosseto," *Dipl. and Cons. Reports*, No. 633, Misc. Ser., 1905 [Cd. 2237-14].

§ Consul Churchill, "Trade of Sicily for the year 1904," *Dipl. and Cons. Reports*, No. 3396, Ann. Ser., 1905 [Cd. 2236-410], p. 9.



## ITALY—continued.

*Lead and Zinc.*—Sardinia is remarkable for its deposits of the ores of lead and zinc. Malfidano, in the province of Cagliari, is the most important zinc mine in the island. It employs 3,000 workmen, and produces annually on an average zinc ore of the value of £200,000.

*Marble.\**—The well-known Carrara marble is obtained from beds of crystalline limestone of Triassic age, which in places attain the enormous thickness of more than 3,000 feet (1,000 m.). In addition to the finest white statuary marble, the quarries furnish many coloured varieties, each known in commerce by its special name.

The importance of the industry may be gauged by the fact that the quarries and dressing establishments of the Apuan Alps gave work to 13,106 persons in 1904, or more than are employed in all the open slate quarries of North Wales. 212,519 tons of marble were exported from Carrara during that year; more than one-third of which was sent to the United States and Great Britain.

*Quicksilver.*—Cinnabar is obtained at Monte Amiata in Tuscany.

*Salt.*—The deposits of rock salt worked in Sicily belong to the Upper Miocene period, and lie geologically above the sulphur-bearing rocks. The Sicilian mines produced 12,202 tons in 1904, and the province of Cosenza 6,436 tons. Salt is obtained from sea water by solar evaporation, and especially in Sardinia and Sicily. The total output of sea salt in 1904 was 433,810 tons.

*Sulphur.*—The sulphur of Sicily is found in seams and lenticular masses in rocks of Upper Miocene age, and mainly in the provinces of Caltanissetta and Girgenti. In the year 1904 there were 960 mines at work, employing 30,225 workmen, and the output of sulphur-bearing rock was 3,291,710 tons. The amount of sulphur obtained was 496,367 tons.

The proportion of the total output of sulphur extracted by the old-fashioned kilns (*calcaroni*) goes on diminishing from year to year. Thirteen years ago 74·5 per cent. of the total output was obtained in this manner, 17 per cent. by kilns with communicating chambers, and 8·5 per cent. by steam apparatuses; last year the corresponding proportions were 29·0, 59·0 and 12·0 per cent. The Sanfilippo kiln, which was introduced for treating the fine mineral (*sterri*), obtained 2,100 tons of sulphur from 10,800 tons of ore in 1904.†

*Volcanic Lava and Ash.*—Basaltic lava is quarried on a large scale at the foot of Vesuvius, and so is volcanic ash known as “pozzolana.” Similar products are obtained near Rome. The Island of Lipari exported 11,010 tons of pumice stone in 1904.

TABLE 472.

NUMBER of MINERAL WORKINGS, VALUE of OUTPUT, and NUMBER of PERSONS EMPLOYED in the Years 1903 and 1904.‡

Kind of Workings.	1903.			1904.		
	Number at Work.	Total Value of Output.	Number of Persons Employed.	Number at Work.	Total Value of Output.	Number of Persons Employed.
Mines, &c. ...	1,604	Lire. 85,593,615	62,954	1,546	Lire. 85,204,934	62,385
Quarries ...	11,556	41,164,562	58,837	11,576	43,856,105	59,063
Turbaries ...	49	297,764	732	47	230,038	735
Sea salt ...	65	3,005,206	2,894	65	3,005,066	2,868
Total ...	—	Lire 130,061,147 £ sterling 5,002,445§	125,417	—	Lire 132,296,143 £ sterling 5,291,846§	125,055

\* Consul Keene, “Trade of Consular District of Genoa for the year 1901.” *Dipl. and Cons. Reports*, No. 2,820, Ann. Ser. [Cd. 786-124]. London, 1902, p. 36, and *Ibid* for 1904, No. 3446 [Cd. 2236-190].

† *Rivista del Servizio Minerario nel 1902*, p. 116 and plate, *nel* 1903, p. 113, and *nel* 1904, p. 107.

‡ *Op. cit.* *nel* 1903, pp. xxxi., xxxvii., and lviii., and *nel* 1904, pp. xxix., xxxv., and lvi.

§ Value calculated at 25 lire = 1*l.* sterling.



## ITALY—continued.

TABLE 473.

NUMBER of PERSONS EMPLOYED in and about MINES and other MINERAL WORKINGS (exclusive of Quarries, Turbaries, and Sea Salt Workings) during the Years 1903 and 1904,\* classified according to mineral wrought.

Kind of Mines or other Mineral Workings.	1903.		1904.	
	Number of Mines or Workings.	Number of Persons Employed.	Number of Mines or Workings.	Number of Persons Employed.
Alum-stone ... ..	1	92	1	73
Antimony ore ... ..	7	273	8	289
Arsenic ore ... ..	1	5	1	3
Asphalt, &c. ... ..	17	1,511	12	1,241
Boric acid ... ..	12	362	12	453
Copper ore ... ..	24	2,095	35	3,062
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	82	3,463	64	3,373
Gas, carburetted hydrogen ... ..	(a)	(a)	(a)	(a)
Gold ore ... ..	9	315	7	193
Graphite ... ..	35	288	33	267
Iron ore ... ..	46	1,726	44	1,707
Iron pyrites (cupreous) ... ..	67	1,302	52	1,263
Lead ore ... ..	(b)	(b)	(b)	(b)
Manganese ore ... ..	6	84	10	93
Manganese and iron ore ... ..	2	164	—	—
Mineral waters ... ..	(a)	(a)	(a)	(a)
Nickel and cobalt ore ... ..	—	—	(c)	(c)
Petroleum ... ..	19	497	20	614
Quicksilver ... ..	16	963	15	972
Rock salt ... ..	22	416	20	385
Salt from springs ... ..	(a)	(a)	(a)	(a)
Silver ore ... ..	4	302	5	151
Sodium sulphate ... ..	1	8	1	11
Sulphur ... ..	1,000	34,789	1,018	33,156
Zinc ore ... ..	233	14,299	188	15,079
Total ... ..	1,604	62,954	1,546	62,385

\* *Rivista del Servizio Minerario*, nel 1903, pp. xviii., xxiii., xxiv.. nel 1904, pp. xvi., xxi., xxii.  
 (a) Included with petroleum. (b) Included with zinc ore. (c) Included with copper ore.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, TURBARIES, and SALT WORKS during the Years 1903 and 1904.\*

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Lire.	Metric Tons.	Lire.
Alum-stone ... ..	8,100	48,600	8,000	48,000
Antimony ore ... ..	6,927	209,797	5,712	177,384
Arsenical pyrites ... ..	50	4,000	80	6,400
Asphalt, &c. ... ..	89,690	1,233,316	111,900	1,595,728
Boric acid ... ..	2,583	774,900	2,624	734,720
Copper ore ... ..	114,823	2,955,100	157,503	3,086,401
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	346,887	2,940,916	362,151	2,975,225
Gas, carburetted hydrogen (cubic metres).	2,255,596	77,844	2,551,396	86,604
Gold ore... ..	5,734	123,337	(a) 1,540	22,980
Graphite ... ..	7,920	149,510	9,765	230,790
Iron ore ... ..	374,790	5,409,905	409,460	5,296,042
„ „ manganiferous ... ..	4,735	58,714	—	—
Iron pyrites (cupreous) ... ..	101,455	1,617,370	112,004	1,763,048
Lead ore ... ..	42,443	5,480,493	42,846	5,591,269
Manganese ore ... ..	1,930	58,650	2,836	86,630
Mineral waters ... ..	31,017	412,503	30,955	412,130
Peat ... ..	20,922	297,764	16,048	230,038
Petroleum ... ..	2,486	737,293	3,543	1,053,294
Quicksilver ... ..	55,528	1,327,962	60,403	1,320,020
Rock salt ... ..	25,911	395,586	18,638	346,769
Salt from springs ... ..	10,962	316,649	11,878	345,551
Salt, sea ... ..	451,633	3,005,206	433,810	3,005,066
Silver ore ... ..	405	235,890	143	151,135
Sodium sulphate ... ..	340	1,392	170	5,100
Sulphur, rock ... ..	3,690,532	43,852,437	3,539,444	41,582,108
Zinc ore ... ..	(b) 159,878	17,171,451	(c) 151,318	18,287,606
Produce from quarries (value) ...	—	41,164,562	—	43,856,105
Total value in lire ... ..	—	130,061,147	—	132,296,143
„ „ £ sterling ... ..	—	£5,202,446	—	£5,291,846

TABLE 475.

ACCIDENTS at MINES, arranged according to CAUSES, during the Years 1903 and 1904.†

Cause.	1903.					1904.				
	No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.		No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.	
				Per 1,000 Persons Employed.	Per 1,000,000 litres' worth of Mineral produced.				Per 1,000 Persons Employed.	Per 1,000,000 litres' worth of Mineral produced.
Falls of ground ...	102	56	62	·89	·65	112	64	72	1·02	·75
Suffocation by gases, explosions, and fires.	20	27	59	·43	·32	30	23	34	·37	·27
Falling down shafts, &c., and miscellaneous.	82	27	58	·43	·32	67	26	51	·42	·31
Blasting ... ..	8	—	9	—	—	11	7	9	·11	·08
Total ... ..	212	110	188	1·75	1·29	220	120	166	1·92	1·41

\* *Rivista del Servizio Minerario nel 1903*, pp. xxiii, xxxi, xlviii, xlix, and lviii, and *nel* pp. xxi, xxix, xlvii, and lvi.

† Ditto, *nel 1903*, p. lxxii, and *nel 1904*, p. lxxii.

(a) Besides this quantity 5,206 tons of ore containing 54 kilograms of gold were obtained whilst prospecting for minerals in the Turin district.

(b) Including 2,357 tons of copper, lead and zinc ore, of the value of 27,240 lire.

(c) „ 2,953 „ „ „ „ „ „ 82,093 „

[ITALY—continued.

TABLE 476.

ACCIDENTS at QUARRIES, arranged according to CAUSES, during the Years 1903 and 1904.\*

Cause of Accident.	1903.				1904.			
	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed.
Falls of ground ... ..	35	34	10	·58	57	40	32	·68
Falling down workings, and miscellaneous.	19	8	15	·14	48	16	36	·27
Blasting ... ..	6	2	11	·03	20	3	19	·05
Total ... ..	60	44	36	·75	125	59	87	1·00

Italian Possessions. (See ERITREA.)

Ivory Coast.†

The Vice-Consul reports that although the mining industry in 1904 was not quite so flourishing as in the preceding year, the development of the gold mines of the Ivory Coast is progressing satisfactorily, particularly in the Sanwi and Indeni districts of the eastern portion of the Colony. The gold is obtained from quartz reefs and from detrital deposits. The quantity of gold dust exported in 1904 is not stated, but during the first half of the years 1902 and 1903 it was valued at £2,855 and £280 respectively. About 80 to 100 men are employed at the Akrizie Mine, in the Sanwi district. Fossil gum opal is fairly abundant near Thiassalé and other places.

Japan.

An account‡ of the mining industry accompanied by a map shewing the locality of the principal mines was published by the Japanese Government for the St. Louis Exhibition of 1904.

The mineral resources of Japan are undoubtedly great, and it is recorded that gold, silver, copper, iron, coal and petroleum have been produced since the 7th or 8th century, but it appears that no marked progress was made in working the deposits until after the year 1868, when the Government adopted Western methods in its Mining and Metallurgical Departments.

Some idea of the importance of the mineral wealth of the country may be gathered from the fact that the value of the output for the year 1903 amounted to nearly 7 million sterling, and the mines gave employment to 163,530 persons.

\* *Rivista del Servizio Minerario nel 1903*, p. lxxvi. and *nel 1904*, p. lxxiii.  
† Acting Consul Mackie, "Trade of Senegal and Dependencies for the year 1902," *Dipl. and Cons. Reports*, No. 3,089, Ann. Ser., 1903 [Cd. 1,766-23], pp. 23-25, and Vice-Consul Armstrong, "Trade of the Ivory Coast for the year 1904," *Dipl. and Cons. Reports*, No. 3,513, Ann. Ser., 1905 [Cd. 2,682-38], p. 11.  
‡ *Sketch of the Mining Industry in Japan*, published by the Bureau of Mines of the Department of Agriculture and Commerce of Japan for the Louisiana Purchase Exposition, 1904.



JAPAN—continued.

TABLE 478.

QUANTITY and VALUE of MINERALS and METALS produced during the Years 1903\* and 1904.†

Mineral or Metal.	1903.		1904.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Antimony, crude	153	1,724		
„ refined (metal)	434	9,320		
Asphalt ... ..	357	97		
Arsenic (metal) ... ..	6	88		
Bismuth ... ..	Kilos, 171	93		
Coal ... ..	10,088,845	2,968,157		
Copper (metal) ... ..	33,245	1,761,929		
Gold (Fine) (a) ... ..	Kilos, 3,140	428,058		
Graphite ... ..	114	2,253		
Iron, pig ... ..	33,870	129,623		
„ pyrites ... ..	16,149	2,642		
„ vitriol ... ..	85	131		
Lead (metal) ... ..	1,728	20,912		
Manganese ... ..	5,616	3,828		
Mercury ... ..	Kilos, 206	46		
Ochre ... ..	59	228		
Peat ... ..	49,862	7,012		
Petroleum, crude ... ..	Litres 192,137,021	288,773		
Phosphoric ore ... ..	191	123		
Salt ... ..	657,489	965,543		
Silver (metal) ... ..	Kilos, 58,704	201,678		
Stones and earth :—				
Building stone ... ..	†	†		
Limestone ... ..				
Clay ... ..				
China Clay ... ..				
Miscellaneous ... ..				
Sulphur .. ..	22,914	58,572		
Tin (metal) . ... ..	19	2,031		
Total value ... ..	—	6,852,861		

\* Twentieth Statistical Report of the Department of Agriculture and Commerce of Japan, Tokyo and Osaka, 1905, as Sketch of the Mining Industry in Japan, published by the Bureau of Mines, 1904.

† Figures for 1904 not yet received.

(a) Not including the output of Formosa.

## JAPAN—continued.

TABLE 479.  
ACCIDENTS at MINES during the Years 1903\* and 1904.†

Kind of Mines.	1903.		1904.†	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal ... ..	215	2.53		
Metal ... ..	85	1.31		
Other Non-metallic ...	9	1.23		
Total ... ..	309	1.97‡		

Of the 215 persons killed by accidents at coal mines in 1903, 43 deaths were caused by "falls of ground," and 125 deaths by fires and explosions of gas.

## Java. (See DUTCH EAST INDIES.)

## Johore.§

Gold has been found in one or two places, and a mine is being worked near Mount Ophir, in the Province of Muar. The country is rich in iron ore, but the mineral is not worked. Important deposits of tin have been discovered in several places, and a considerable amount of tin mining is now carried on in the Ulu Johore districts, and some at Bukit Mor, and Dinding.

## Liberia.||

It is supposed that Liberia contains much mineral wealth, and some prospecting for gold is going on, but up to the present time no payable reef has been discovered. Deposits of corundum have been found in Maryland. Copper and quicksilver are reported to exist. Iron has been worked for a long time by the natives in the interior.

## Lourenço Marques. (See PORTUGUESE EAST AFRICA.)

## Luxemburg.

The only important mineral production of the Grand Duchy of Luxemburg is iron ore. On account of the commercial connection of Luxemburg with Germany, the returns of the mines are given in the German Mineral Statistics, and will be found under "German Empire."

## Madagascar.¶

The mineral wealth of the island appears to be great. In addition to gold, which is found in alluvial deposits widely spread over the island, the ores of antimony, copper, iron and tin are said to be abundant, to say nothing of asphalt, coal, and petroleum.

\* Twentieth Statistical Report of the Department of Agriculture and Commerce of Japan, Tokyo and Osaka, 1905; and Sketch of the Mining Industry in Japan, published by the Bureau of Mines, 1904.

† Figures not yet received.

‡ Excluding Workers in Placer Mining.

§ The Singapore and Straits Directory for 1905. Singapore, 1905, pp. 346 and 348.

|| Consul MacDonell, "Trade of Liberia for the year 1903." *Dipl. and Cons. Reports*, No. 3,135, Ann. Ser., 1904 [Cd. 1766-69], p. 6.

¶ MS. communication to Foreign Office, 5 July, 1900. Consul Porter, "Trade of Madagascar for the Year 1903. *Dipl. and Cons. Reports*, No. 3254, Ann. Ser., 1904 [Cd. 1766-188], pp. 11-13, and Consul Sanzier, "Trade of Madagascar for the year 1904, *Dipl. and Cons. Reports*, No. 3,509, Ann. Ser. 1905 [Cd. 2682-34], pp. 4 and 7.



## MADAGASCAR—continued.

According to Consul Porter, rich deposits of alluvial gold have been discovered in the valley of the Amposary, a tributary of the Mananjary river, about 40 miles east of the town of Ambositra. The auriferous gravel is washed in pans by the natives, of whom about 3,000 are at work; it is however expected that reef mining, which is now beginning to attract attention, will in the next few years supersede the present primitive methods of gold extraction. During 1904 the number of permits issued to prospect for gold almost doubled that of 1903. The district is unhealthy owing to the prevalence of fever.

Gold mining in the island is now regulated by the Decree of the 20th February, 1902, which affords many facilities for working which were not permissible under the old law of July, 1896.

The output of gold continues to increase. The quantity produced and exported in 1904 was 3,035 kilos (97,577 ozs.), valued at £307,718, as against 2,299 kilos (73,915 ozs.), valued at £234,272 in the previous year.

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Mexico.\*

Many minerals are obtained in Mexico. The most important are the ores of copper, gold, lead, and silver.

*Asphalt.*—Deposits of asphalt have been worked for many years near Tamiahua in the State of Vera Cruz.†

*Coal.*—Various coalfields have been discovered, and no doubt will gradually become of great value to the Republic. At present the annual output is about 700,000 tons, which is obtained by three companies, the Coahuila, the Sabinas, and the Mexican.‡ Native coal is used on some of the railways. About 60,000 tons of coke are produced annually.

*Copper.*—The most important copper mines in Mexico are at Boleo, Lower California, at Cananea, Sonora, and at Fezintlan, Puebla.

*Gems.*—Opals§ are mined extensively in the State of Queretaro.

*Gold.*—The precious metal is found in many of the provinces, but especially in Chihuahua, Sonora, Sinaloa, Guerrero, Sonora, Oaxaca, and Lower California.

*Iron.*—Rich deposits exist in various parts of Mexico. The principal blast furnaces are at Monterrey in the State of Nuevo Leon.†

*Marble.*—The so-called "Mexican onyx" is a handsome marble, obtainable in large blocks, and much prized for decorative purposes.

*Petroleum.*—Sinking operations for petroleum are being carried on at Ebano, near Tampico, and also at Lavin in the State of Tamaulipas.†

*Silver.*—Mexico now produces over 30 per cent. of the world's output of silver. In 1881 the production of the Republic in ounces was 23 millions, in 1891, 33 millions, in 1901, 57½ millions, and in 1902, 60 millions.|| The principal mining districts are in the States of Guanajuato, Zacatecas, San Luis Potosi, and Hidalgo.

TABLE 480.

PERSONS EMPLOYED at MINES during the Years 1902 and 1903.

Year	Men.	Women.	Boys.	Total.
1902 ... ..	90,305	613	5,102	96,020
1903 ... ..	73,015	796	4,278	78,089

\* Information furnished by the Ministry of Finance, Mexico, and Romero, *Geographical and Statistical Notes on Mexico*. New York and London, 1898, pp. 13-27, and Sellerier, *Data referring to Mexican Mining*. Mexico, 1901.

† Consul Jerome, "Trade of the Consular district of Mexico for the year 1903." *Dipl. and Cons. Reports*, No. 3,285, Ann. Ser. 1904 [Cd. 2236-29], and *Ibid* for 1904, No. 3,429 [Cd. 2236-173].

‡ Consul Leay, "Trade of Consular District of Vera Cruz for the year 1903." *Dipl. and Cons. Reports*, No. 3,262, Ann. Ser., 1904 [Cd. 2236-6], p. 14.

§ Kunz, "Gems and precious stones of Mexico." *Trans. American Inst. Min. Eng.*, 1901.

|| Leay, *Op. cit.*, p. 5.



## MEXICO—continued.

TABLE 481.

VALUE of MINERALS exported during the Years 1903 and 1904.\*

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	\$	Metric Tons.	\$
Antimony ore ... ..	7,301	78,335	81	1,383
Antimony ... ..	2,310	1,115,651	1,694	813,211
Asphalt ... ..	175	7,216	92	13,314
Coal (Estimated output) ... ..	700,000†	6,795,976‡	700,000†	8,500,800‡
Copper and Copper ore ... ..	62,628	20,176,508	105,703	27,884,664
Gold ... ..	Kilos. 15,134	10,222,318	Kilos. 17,518	11,832,315
Graphite... ..	1,401	83,270	970	94,871
Iron and Iron ore ... ..	381	13,782	100	1,844
Lead and Lead ore ... ..	100,543	5,559,067	95,011	5,076,395
Marble ... ..	1,065	112,888	964	175,602
Precious stones... ..	—	11,782	—	475
Salt ... ..	2,842	15,558	156	5,443
Silver ... ..	Kilos. 1,913,567	78,293,607	Kilos. 1,599,619	65,448,426
Zinc ore ... ..	40	608	2,205	32,146
Minerals not specified... ..	—	28,123	—	7,138
Total value in \$ ... ..	—	122,514,689	—	119,888,027
" " £ ... ..	—	12,251,469§	—	£11,988,803§

TABLE 482.

DEATHS from ACCIDENTS at MINES during the Years 1902 and 1903.\*

Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
1902 ... ..	220	2·29
1903 ... ..	308	3·94

*Legislation.*—On the 25th March, 1905, the President of the Republic issued a law modifying the taxes on the mining industry and on gold and silver refineries established in the Republic. Two Decrees, dated the 19th June and 24th November, 1905 respectively, modifying the stamp tax referred to in Article 4 of the law, and two supplementary Decrees dated the 17th January, and 9th February, 1906, specifying the conditions which must be complied with by refineries in order to obtain re-imbursement of taxation, have since been issued.||

\* Official Return furnished by the Ministry of Finance, Mexico.

† These figures represent the approximate annual output of coal.

‡ Estimated on the value of the quantity exported.

§ Calculated at 10 dollars = £1.

|| Despatches received at the Foreign Office from H.M. Minister at Mexico.



### Morocco.\*

*Copper.*—In the beginning of the sixties copper ore was still being worked near Tarudant, the capital of the province of Sus. The ore is likewise found in the Tangier region.

*Fuller's Earth.*—The quantity of Fuller's earth exported from Tangier and Laraiche was 128 tons in 1903 and 175 tons in 1904.†

*Gold.*—Silver and gold are said to occur in the province of Sus.

*Iron.*—It is probable that the Carthaginians worked the old iron mines, of which remains exist at Djebel Hadid, 14 miles N.E. of Mogador.

*Salt.*—Morocco is rich in salt. Some is found in the beds of dried-up lakes in summer. Rock salt is obtained in the Atlas Mountains, near Demnat; and at Rabat and elsewhere sea water is evaporated by the heat of the sun.

### Netherlands and its Colonies. (See HOLLAND, DUTCH EAST INDIES, AND DUTCH WEST INDIES.)

### New Caledonia.‡

The varied rich mineral deposits of New Caledonia have as yet hardly been touched owing to want of outside enterprise and capital.

*Chromic Iron.*—The Island produces more chromic iron than any other country except Turkey, and the output in 1904 was the same as that of the previous year. The ore exported is good, and gives 50 to 52 per cent. of chromium oxide. The deposit of ore at Tiebagi on the north-west of the island is one of the most valuable yet known.

*Coal.*—The presence of coal at several places in this Colony has been established, but nothing has been done up to the present to work the deposits. It is, however, reported that a company is about to work those situated near Noumea.

*Cobalt Ore.*—8,964 tons of ore were produced in 1904, containing about 3 to 4 per cent. of metal; an increase of 672 tons as compared with that of 1903.

*Copper Ore.*—The improvement in the output of copper ore as stated in 1902 has not been maintained. Only 9 tons were obtained in 1903 and none in 1904.

*Gold.*—Slight traces of gold have been discovered, but not in any paying quantity.

*Nickel Ore.*—The figures for nickel ore in Table 484 show an increased quantity in 1904 compared with the previous year. The ore exported yields from 6 to 8 per cent. of metal.

TABLE 483.

### PERSONS EMPLOYED at MINES during the Year 1898.§

Year.	White.	Coloured.	Total.
1898    ...    ...	3,831	1,259	5,090

\* Fischer, "Die Bodenschätze Maroccos," *Zeitschr. f. prakt. Geologie*, Vol. VIII., 1900, Part 4, p. 110.

† Vice-Consul Smith, "Trade of Consular District of Tangier for the year 1904." *Dipl. and Cons. Reports*, No. 3,426, Ann. Ser. 1905 [Cd. 2236-170], p. 11.

‡ Information furnished by the French Government, and Consul Brophy, "Trade of New Caledonia for the years 1903-04." *Dipl. and Cons. Reports*, No. 3,431, Ann. Ser. 1905 [Cd. 2236-175]

§ *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année, 1898*, p. 85. Later figures are not obtainable.



## NEW CALEDONIA—continued.

TABLE 484.

QUANTITY and VALUE of MINERALS exported during the Years  
1903 and 1904.\*

Mineral.	1903.		1904.	
	Quantity Exported.	Value.	Quantity Exported.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chrome ore ... ..	21,437	1,124,000	21,437	2,429,350
Cobalt ore ... ..	8,292	2,109,000	8,964	1,823,200
Copper ore ... ..	9	Not stated	—	—
Lead ore... ..	5	Not stated	—	—
Nickel ore ... ..	77,360	3,161,000	98,655	4,095,875
Other ores ... ..	—	—	—	61,025
Total value in francs ... ..	{ 6,394,000		{ 8,409,450	
„ „ „ £ sterling	{ £255,760		{ £336,378	

## Nicaragua.†

The whole of the eastern side of the Cordillera mountains is stated to be very rich in minerals. Most of the gold exported in 1903 was obtained from that locality. At present the mining industry of the Republic is much retarded by the scarcity of labour, of water, and means of communication. The exact output of the mines and alluvial diggings does not appear to be known.

Salt is obtained on the Pacific coast by the evaporation of sea water, but the amount of production cannot be ascertained. In 1903, 545 metric tons, valued at £2,241, were exported to the neighbouring Republics of Honduras, Salvador and Guatemala.

The exports of gold and gold ore are given in the table below.

TABLE 485.

VALUE of GOLD exported during the Years 1902 and 1903.

Mineral.	1902.	1903.
	£	£
Gold (bars and dust) ...	96,870	114,366
Gold ore ... ..		

## Norway.‡

Norway is far less important as a mining country than Sweden.

*Apatite.*—This mineral was worked on a large scale some years ago at Oedegaarden, but the output is now comparatively small.

*Copper.*—Copper ore and pyrites are the chief metallic products of Norway. They are produced by various mines, among those of which may be mentioned Røros, Sulitelma, and Lyngen.

*Felspar.*—The supply of felspar is derived mainly from veins of pegmatite in Sætersdalen in the province of Smaalenene and along the coast between Bamle and Arendal. Quartz and mica are obtained from the same deposits.

*Gems.*—Emeralds are being obtained near Minne, but the production is unimportant.

*Granite.*—Quarries producing granite, syenite, gabbro or porphyry, are worked near Fredrikshald, Frederikstad, Larvik and Drammen. The total value of the granite exported in 1904 is estimated at £155,700.

\* *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1902, and pour l'année 1903, and Brophy, op. cit.*

† Consul Chambers, "Trade of Nicaragua for the Year 1902." *Dipl. and Cons. Reports*, No. 2,963, Ann. Ser., 1903 [Cd. 1386-40], and Consul Bingham, *op. cit.* for 1903-4, No. 3337 [Cd. 2236-81], 1905.

‡ Information furnished by the Central Statistical Office, Kristiania, *La Norvège. Ouvrage Officiel publié à l'occasion de l'Exposition Universelle de Paris, 1900.* Kristiania, 1900, p. 295, and Consul-General Dundas, "Trade and Commerce of Norway for the year 1904." *Dipl. and Cons. Reports*, No. 3,425, Ann. Ser. 1905 [Cd. 2236-169].



## NORWAY—continued.

*Iron Ore.*—Important deposits of iron ore are reported to exist especially in the northern part of the country.

*Infusorial Earth.*—Beds of infusorial earth are worked at different places in the South of Norway.

*Marble.*—Fauske, in Nordland, is the chief marble centre. The quarries are worked on a large scale.

*Silver.*—The Kongsberg mines have long been famous for their native silver, which is sometimes met with in masses of considerable size; the picked stuff sent to the smelting works contains 70 per cent. of the precious metal. The amount of silver obtained by smelting, and derived entirely from Kongsberg, was 8,064 kilos., valued at 575,000 kroner in 1904.

*Slate.*—The principal quarries are situated at Valdres, from which place much of the slate is exported.

*Soapstone.*—This mineral forms one of the exports of Norway.

There appears to be no official information about accidents in mines in Norway.

TABLE 486.

PERSONS EMPLOYED at MINES during the Years 1903 and 1904.\*

Kind of Mines.	1903.	1904.
Apatite ... ..	?	?
Chrome ore ... ..	—	9
Copper ore ... ..	1,722	2,155
Felspar ... ..	?	?
Gold ... ..	87	—
Iron ore ... ..	251	196
Iron pyrites (in part cupreous) ...	529	539
Manganese ore ... ..	—	3
Molybdenite ... ..	30	24
Nickel ore ... ..	7	47
Rutile ... ..	—	—
Silver and silver ore ... ..	202	227
Zinc and lead ore ... ..	40	18
Total ... ..	2,868	3,218

TABLE 487.

QUANTITY and VALUE of MINERALS produced from MINES during the Years 1903 and 1904.\*

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Kr.	Metric Tons.	Kr.
Apatite (exported) ... ..	1,795	90,000	1,456	73,000
Chrome ore ... ..	—	—	154	3,000
Copper ore ... ..	35,417	1,536,000	36,891	1,725,000
Felspar (exported) ... ..	18,590	278,000	20,835	312,000
Gold (fine) ... ..	Kilos. 11	31,000	—	—
Iron ore ... ..	53,475	367,000	45,328	269,000
Iron pyrites (in part cupreous) ...	129,939	3,611,000	133,603	3,510,000
Manganese ore ... ..	—	—	22	1,000
Molybdenite ... ..	31	80,000	30	65,000
Nickel ore ... ..	5,670	110,000	5,352	105,000
Silver (fine) ... ..	Kilos. 7,269	489,000	Kilos. 8,064	575,000
Titanium ore (rutile) ... ..	25	15,000	25	10,000
Zinc and lead ore ... ..	335	10,000	42	2,000
Total value in Kr....	—	6,617,000	—	6,650,200
" " £ sterling...	—	£363,571	—	£366,200

\* Norges Officielle Statistik, Fjerde Raekke, No. 113, 1905, Kristiania, and Official Return furnished by the Central Statistical Office, Kristiania.



## Panama.\*

The Republic possesses rich deposits of auriferous quartz. The principal mine is Cana in the Darien district, which employs about 1,000 persons. The quantity of gold obtained and shipped to Europe in 1903 was 40,570 ozs. valued at £160,189. Manganese ore was obtained from the Nombre de Dios Mine up to June 1902, but owing to a reduction in the price of the metal the operations had then to be suspended, and have not since been resumed.

## Paraguay.

Though many useful ores and minerals are said to exist in Paraguay, they still remain unworked.

## Persia.†

The minerals of the country belong to the Government, and the mines are leased out to private persons. The Ministry of Mines has no account of the number of persons employed, nor of quantity and value of the minerals produced.

The mineral wealth of Persia is great, though it cannot be properly utilized at the present time owing to want of easy means of communication. Deposits of the following useful minerals are known to exist, viz. :—alum, antimony ore, borax, coal, the ores of cobalt, copper, gold, iron, lead and manganese, petroleum, realgar, salt, saltpetre, silver-lead ore, sulphur, and turquoises.

*Coal and Iron.*—There are fine coal deposits‡ near Kerman, and much iron ore of good quality on the slopes of the Elburz range and elsewhere.

*Copper.*§—Rich deposits of copper are known. During the year ended March 1904, 8 tons were exported from the Bahrain Islands. The copper mines to the south of Kerman require better means of communication in order to develop them properly.

*Lead Ore.*—Argentiferous lead ore is plentiful, but is worked in a primitive fashion.

*Petroleum.*—In the lower valleys of the province of Kermanshah, near the Turkish frontier, there exists a wide oil area extending south from Kerkuk in Turkey to Shuster in Persia, and even to the Island of Hormuz. The principal oil fields are situated in the province of Kermanshah.||

*Salt.*—Some salt is obtained (by the process of evaporation in tanks) from the salt water which collects in the oil wells of the Province of Kermanshah. In the year ended March 1905, 12 tons valued at £25 were exported from Kermanshah.|| 28 tons were exported from Bunder Abbas in 1903, but none in 1904.§

*Turquoises.*—The annual rent paid for the turquoise mines near Nishapur in Khorassan is £5,000. The value of the gems exported in 1904-5 was £9,396, which is stated to be only about a quarter of the total value of the output of the mines.¶

\* Consul Mallet "Trade of Panama for the year 1903," *Dipl. and Cons. Reports*, No. 3292, Ann. Ser., 1904 [Cd. 2236-36].

† Helmhacker, "The Mineral Resources of Persia," *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 38, and *B. u. h. Zeitung* Vol. LVIII., 1899, p. 272.

‡ *Berg-und hüt. Zeit.*, Vol. LVIII., 1899, p. 272.

§ Vice-Consul Richards, "Trade of the Persian Gulf for the year 1904," *Dipl. and Cons. Reports*, No. 3408, Ann. Ser., 1905 [Cd. 2236-152]. Consul Sykes "Trade of Kerman Consular District for the year 1904-5," *Dipl. and Cons. Reports*, No. 3374, Ann. Ser., 1905 [Cd. 2236-118].

|| Consular Agent Rabino "Trade of Kermanshah for the year 1904-5," *Dipl. and Cons. Reports*, No. 3420, Ann. Ser., 1905 [Cd. 2236-164].

¶ Consul-General Sykes, "Trade of Khorassan for the year 1904-5," *Dipl. and Cons. Reports*, No. 3499, Ann. Ser., 1905 [C. 2682-24].



## Peru.\*

No exact data exist concerning the number of persons employed in mines; but it is estimated at 100,000, including a few females.

The number of persons employed on the coast at the salt works, quarries, and petroleum wells is estimated at 5,000.

The principal minerals of Peru are borate of lime, coal, copper ore, gold, petroleum, salt, and silver ore.

*Borates.*—Though borates occur in various places, the only deposit which is being worked at a profit at the present time, is that of Salinas, near the boundary between the provinces of Arequipa and Moquegua.

*Coal.*—All the different varieties of mineral fuel exist in Peru, viz.:—peat, lignite, coal, and anthracite. Lignite is found in the Tertiary rocks on the coast and elsewhere. The true coal and anthracite are found in the Cretaceous and Jurassic rocks in various places, and a solid hydro-carbon, which is neither coal nor anthracite, occurs in veins, and is likewise worked and sold as mineral fuel. There are very large areas of coal in the department of Ancachs, in the Santa Valley, at Jatunhuasi, near Jauja, in the department of Junin, and in the neighbourhood of Cerro de Pasco.

*Copper Ore.*—Rich veins of copper ore exist in the Cerro de Pasco silver mines and also at Morococha, near Yauli, and in many other districts. A branch of the Central Railway has now been made to Morococha which will greatly help the mines in that locality.†

*Gold.*—The provinces which are richest in gold are Sandia, Carabaya, Paucartambo and Pataz. The precious metal has been found in paying quantities in the river beds of the two first named districts and at Poto. The decrease in the total output in 1903 and 1904 is largely attributed to the small yield of gold at the Santo Domingo Mine.

*Iron Ore.*—Important deposits of iron ore are known to exist in the department of Piura, and close to the Southern Railway near Lake Titicaca, but owing to the heavy cost of transport little has been done towards developing them. Other deposits have been found close to the Central Railway, near the smelting works of Casapalca, and magnetite has been discovered at Aija, about 60 miles from the Coast.

*Molybdenite.*—Several mines containing this mineral exist near Jauja.

*Petroleum.*—The only places where petroleum is being obtained at the present time are on the coast in the department of Piura, and in the province of Tumbes.

*Silver Ore.*—This is the principal mineral worked in Peru; the most important mines are at Cerro de Pasco, Hualgayoc, Salpo, Huaylas, Recuay, Cajatambo, Yauli, Huallanca, Huarochiri, Castrovirreyna, Caylloma, Lampa and Puno. The output of silver has diminished considerably in 1904 on account of the reduction of work at mines in the departments of Arequipa, Cajamarca and Junin.

*Salt.*—The production of salt is a Government monopoly. It is found in abundance in Peru, and occurs in various ways. There are deposits on the coast at Sechura, Huacho, Otuma, Moquegua, &c. In the Andes the salt beds of San Blas are worked on a large scale, and in eastern Peru there is the famous Cerro de la Sal.

*Sulphur.*—Sulphur is found on all the volcanoes of the Andes in considerable quantities, besides occurring in sedimentary deposits near Bayobar in the department of Piura.

*Wolframite.*—This mineral is obtained from a mine in the province of Tayacaja in the department of Huancavelica.

\* Garland, *Apuntes sobre la industria minera 1900*. Lima, 1901, and *Mines and Mining in Peru*. Lima, 1905; Consul General St. John, "Trade of Peru for the year 1903," *Dipl. and Cons. Reports*, No. 3281, Ann. Ser., 1904 [Cd. 2236-25]; *Boletín del Ministerio de Fomento*, Ano, II No. 11, Lima 1904, pp. 46-54; Denegri "Estadística Minera del Perú en 1904" *Boletín del Cuerpo Ingenieros de Minas del Perú*, No. 24, Lima, 1905; and Mensaje presentado al Congreso Ordinario de 1905 por el Presidente de la República del Perú, Lima, 1905.

† Denegri, "Estado actual de la industria minera de Morococha," *Boletín del Cuerpo de Ingenieros de Minas del Perú*, No. 25, Lima, 1905.



PERU—continued.

TABLE 488

QUANTITY and VALUE of MINERALS produced during the YEARS 1903 and 1904.

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Borates ... ..	2,466	22,194	2,675	26,754
Coal ... ..	50,000	50,000	59,920	59,920
Copper ore* ... ..	33,031	476,824	38,994	504,604
Gold (fine) ... ..	Kilos. 1,078	145,205	Kilos. 601	75,102
Lead ore* ... ..	4,123	5,141	9,765	8,636
Petroleum (crude) ... ..	37,079	149,390	38,683	116,834
Salt ....	17,637	17,637	18,544	18,544
Silver (fine) ... ..	Kilos. 170,804	579,963	Kilos. 145,165	532,507
Sulphur ... ..	—	—	21	80
Total Value ... ..	—	1,446,354	—	1,342,981

The Mining Regulations of Peru are contained in a Code issued in 1903.†

### Philippine Islands.‡

A map of the Philippines showing the localities of the various mineral deposits is published in the Fifth Annual Report of the Mining Bureau. It is stated in the Report that at the present time development work is being carried on in Lepanto-Bontoe, Benguet, Bulacan, Rizal, Tayabas, the Camarines, Albay, Masbate, Cebu and Mindanao.

*Coal.*—Coal and lignite are found on many of the islands, and sufficient mining has already been done in the Danao and Compostela coal-fields of Cebu to prove the value of the deposits there. The thickness of the coal seams varies from a few inches to 18 feet.

*Copper.*—Copper ore occurs in many of the islands, but the most important deposits are those of Suyoc and Mancayan in Northern Luzon. The ores of the latter are reported to average 16 per cent. of copper.

*Gold.*—Large quantities of gold have been extracted from alluvial deposits and quartz veins, and there appears to be a promising future for hydraulic and dredger mining in the Camarines, in Masbate, and in Mindanao, and for vein mining in Lepanto, Benguet, the Camarines, Masbate, and Mindanao.

*Iron.*—Magnetite and hæmatite are found in Abra Province, in San Miguel and Angat, in Boso-boso, Rizal and in the Camarines.

*Lead.*—The ore of this metal is found in Bontoc, Marinduque, the Camarines, Luzon, Cebu, and Panay.

*Manganese.*—Some rich manganese ore has been discovered in the island of Masbate.

\* The metallic contents of the copper and lead ores were as follows : for the year 1903, copper, 9,497 tons, lead, 1,303 tons ; for the year 1904, copper, 9,504 tons, lead, 2,209 tons.

† Castro, "Código y Vocabulario de Minería," Nueva Legislacion Peruana, Tomo VII., Lima, 1903.

‡ "McCaskey, "Fifth Annual Report of the Mining Bureau for the year ending 31st August, 1904," Manila, 1905.



PHILIPPINE ISLANDS—*continued.*

*Petroleum and Natural Gas.*—Mineral oil exists in Cebú, Panay, Guimaras, Mindanao, and Leyte, and a considerable quantity is obtained by crude methods of working. Cebú has likewise natural gas.

*Quicksilver.*—According to the reports of prospectors, there are deposits of quicksilver in the Camarines and in Panay.

*Salt.*—Large beds of rock salt are believed to exist in the mountains of Nueva Vizcaya.

*Silver.*—The only silver found at present is either in the form of argentiferous galena or alloyed with the gold.

Stone for building, and various kinds of clay are found in abundance throughout the islands.

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Porto Rico.\*

The island of Porto Rico possesses valuable mineral resources, but owing to want of capital no *bona fide* mining is being carried on at present.

*Coal.*—Coal has been found in the western part of the island and at Guatemala.

*Copper.*—The ores of copper are found in several places.

*Gold.*—About 12 kilos. of gold, valued at from six to eight thousand dollars, are panned out annually from the beds of creeks and rivers. Prospecting for gold was continued during 1904 in the Corozal district.

*Gypsum.*—This mineral is common.

*Iron Ore.*—There are valuable deposits of iron ore, especially north of Juncos.

*Lignite and Peat.*—These two minerals occur in many places.

*Phosphate of Lime.*—Phosphate rock is everywhere abundant. It has been worked on the islet of Mona, in the San Domingo Channel, and about 9,000 tons were exported to Europe in 1894.

*Salt.*—Rich deposits of salt are known in several places.

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Portugal.†

According to a Consular report‡ the South of Portugal is rich in minerals, particularly copper and iron, but, as most of the mines are situated a long distance from a railway and are unapproached by roads, very few are being worked. The official statistics omit all mention of the marble, slate, and other stone quarried in the country.

*Asphalt.*‡—There are large deposits of this mineral near Alcoba.

*Antimony Ore.*—The principal antimony mines are in the commune of Gondomar, in the Porto district; the ore likewise occurs in the Braganza district.

*Copper.*—The deposit of copper-bearing pyrites at San Domingos, in Southern Portugal, furnishes most of the mineral wealth of the country at the present time, but there is also an important mine at Aljustrel,‡ producing cupreous iron pyrites.

*Gold.*‡—Auriferous quartz exists in the districts of Coimbra, Evora, Beja and Faro, and alluvial gold has been found in the neighbourhood of Lisbon, Santarem, Castello Branco and Coimbra.

*Iron Ore.*‡—Rich deposits of iron ore exist, which it is expected will some day become a source of considerable wealth. The principal iron mines now worked are those near Beja and Evora.

*Lignite.*‡—This mineral fuel abounds near Coimbra, Leiria and Santarem.

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\* Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.—"Zur Geologie der Insel Mona in West Indien," *Berg- und hüttenmännische Zeitung*, Vol. LVIII., 1899, p. 337.—Domerech "Porto Rico; her Mineral Resources," *Mines and Minerals*, Vol. XIX., 1899, p. 529, and Consul Churchward, "Trade of Porto Rico for the year 1904," *Dipl. and Cons. Reports*, No. 3379, Ann. Ser., 1905 [Cd. 2236-123].

† Official Return furnished by the Portuguese Government.

‡ "Trade of South Portugal for the year 1903," *Dipl. and Cons. Reports*, No. 3178, Ann. Ser. 1904 [Cd. 1766-112].



PORTUGAL—continued.

*Marble.*—Though the country cannot boast of treasures of white statuary marble like that of Carrara, it possesses many beautiful varieties of the stone.

*Slate.*—There are slate quarries at Valongo which are worked by an English company. They produce large slabs for billiard tables, tanks, and cisterns. The quantity exported in 1902 from Oporto was 16,000 tons.\*

*Tin Ore and Wolfram.*—These minerals occur in the Villa Real and Braganza districts.

TABLE 489.

PERSONS EMPLOYED at MINES during the Years 1903 and 1904.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
Coal ... ..	224	—	224	224	40	264	488
Iron ore ... ..	33	—	33	8	—	8	41
Other mines ...	1,602	—	1,602	1,676	161	1,837	3,439
Total for 1904	1,859	—	1,859	1,908	201	2,109	3,968
Total for previous year ... ..	1,838	—	1,838	2,517	192	2,709	4,547

TABLE 490.

PERSONS EMPLOYED at QUARRIES during the Year 1890.†

Under-ground.			Above-ground.			Total Under and Above Ground.
Males.	Females.	Total.	Males.	Females.	Total.	
419	—	419	4,240	57	4,297	4,716

TABLE 491.

QUANTITY of MINERALS produced during the Years 1903 and 1904.

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Milreis.	Metric Tons.	Milreis.
Arsenic ... ..	698	27,763	1,370	54,526
Coal (Anthracite) ... ..	8,063	21,157	12,805	31,222
Copper precipitate ... ..	2,448	303,112	1,757	268,351
Cupreous pyrites ... ..	527	9,616	297	15,189

\* Acting Consul Grant, "Trade of Northern Portugal for the year 1902." *Dipl. and Cons. Reports*, No. 3064, Ann. Ser., 1903 [Cd. 1,385-141], p. 17.  
† No later return available.



PORTUGAL—continued.

TABLE 491—continued.

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Milreis.	Metric Tons.	Milreis.
Cupreous iron pyrites ... ..	376,177	764,307	383,581	797,940
Gold (fine) ... ..	Kilos 1·3	1,043	Kilos 1·3	940
Gold and Antimony concentrates ...	83	2,750	81	2,802
Iron ore ... ..	15,200	14,364	12,488	14,841
Iron pyrites ... ..	*	—	225	4,394
Lead and copper ... ..	830	15,788	50	948
Manganese ore ... ..	30	240	—	—
Tin ore ... ..	—	—	37	10,883
Tin (Metal) ... ..	—	—	14	8,400
Wolfram... ..	228	35,798	358	159,046
Zinc, Copper and Lead ore ... ..	1,974	18,593	180	1,700
Total value in milreis ... ..	—	1,214,531	—	1,371,182
"    "    £ sterling ... ..	—	£269,896†	—	£304,707†

TABLE 492.

DEATHS from ACCIDENTS at MINES during the Years 1903 and 1904.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
Coal ... ..	1	—	1	—	—	—	1	2·05
Iron ore ... ..	—	—	—	—	—	—	—	—
Other mines ... ..	2	—	2	—	—	—	2	·58
Total for 1904 ...	3	—	3	—	—	—	3	·76
Total for pre- ceding year }	4	—	4	—	—	—	4	0·88

\* Included with Cupreous Iron Pyrites.  
† Calculated at the rate of 4·5 milreis = £1 sterling.

## Portuguese East Africa.

Coal, gems, and gold are said to have been discovered in the district of Lourenço Marques,\* and coal on Inyack Island close to Delagoa Bay. Coal has also been found on the Catembe River, some 40 miles from Lourenço Marques, and much prospecting is going on. Coal of moderate quality abounds at Tete, which will prove of great value economically in the working of gold mines in the vicinity.†

In addition to large auriferous deposits, in connection with which many ancient workings can be distinctly traced, copper and coal are known to exist in the North of the Zambesi. Annexed to the report of Acting Vice-Consul Bowhill‡ is a map showing the localities of the gold, copper, and coalfields in Zambesia. The Campanhia da Zambesia is desirous of opening up the two goldfields of Chifumbase and Missale, situated about 150 miles north-west of Tete.†

According to Consul Greville,§ the gold dredging industry in the Beira district is at present at a standstill for want of working capital. In 1904 a new mining law came into operation, but it does not appear to have resulted in any improvement in the mining industry of Manicaland.

The amount of gold actually produced in Portuguese East Africa at the present time is small. It is reported that the precious metal has been discovered in the southern portion of the Province of Angoche.

## PORTUGUESE NYASSALAND.||

Portuguese Nyassaland possesses large deposits of coal and the ores of iron, gold, and silver. The ores of copper, nickel, and zinc have been discovered, besides graphite, marble, mica, and slate.

*Coal.*—There are two known coalfields—one within a few miles of the natural harbour afforded by Pemba Bay, the other around Itule, on both sides of the Lugenda River.

*Iron.*—Magnetic ore occurs over a considerable area just west of the Pemba coalfield and is smelted on a small scale by the natives.

*Gold.*—The principal known gold region is the district about the Rarico River, a tributary of the Lugenda.

*Mica.*—This mineral is reported to exist in considerable quantities in the territories of the Nyassa Company.

## Prussia. (See GERMAN EMPIRE.)

## Roumania.¶

The minerals worked in Roumania are lignite, petroleum, rock salt, and stone.

*Lignite.*—Lignite is found in very many parts of the country, and the beds are sometimes as much as 20 feet thick; but lignite mining is at present in its infancy. The largest mines are at Margineanca, and are worked by the State; they produce about 51,000 tons yearly. Great hopes are based upon the utilization of lignite by making it into briquettes with petroleum residues; the fuel so produced is of excellent quality and is cheaper than Welsh coal.

*Petroleum.*—Petroleum is, and probably always will be, the mainstay of the mining industry in Roumania. The oil-bearing regions are shown on maps in the reports of M. Rommenhöller and Mr. Sutherland.\*\* The illustrated pamphlet of the latter

\* *Zeitschr. f. prakt. Geol.*, 1899, p. 267. Despatch from H.M. Minister at Lisbon to Foreign Office. Consul Ross, "Trade of Lourenço Marques and District for the year 1898." *Dipl. and Cons. Reports*, No. 2235, Ann. Ser., 1899 [C. 9044-61].

† Vice-Consul Wallis, "Report on the Trade of Tete and District for the year 1903." *Dipl. and Cons. Reports*, No. 3210, Ann. Ser., 1904 [Cd. 1766-144], pp. 4 and 5.

‡ "Trade of Chinde for the year 1903." *Dipl. and Cons. Reports*, No. 3211, Ann. Ser., 1904 [Cd. 1766-145], and Vice-Consul Hewitt-Fletcher, "Trade of Chinde, for the year 1904." *Dipl. and Cons. Reports*, No. 3495, Ann. Ser. 1905, [Cd. 2682-20].

§ "Trade of Beira for the year 1903." *Dipl. and Cons. Reports*, No. 3187, Ann. Ser., 1904 [Cd. 1766-121], and *Ibid* for 1904, No. 3422, Ann. Ser., 1905 [Cd. 2236-166].

|| Worsfold, "Portuguese Nyassaland," London, 1899. *Handbook of the Nyassa Company*, London, 1898, p. 30, and information furnished by The Nyassa Company.

¶ Alimanestiano, "L'Exploitation des Mines en Roumanie." *Courrier de Roumanie*, Nos. 4, 5, and 6; Bucharest, 1898-99; and "Der Bergbau Rumäniens," *Allgemeine bergmännische Zeitschrift*, No. 5, 1899, p. 16; *Le sous-sol de la Roumanie*, 1900, and Crémer, *Richesse Minérale de la Roumanie*, 1900.

\*\* Rommenhöller, *La Roumanie*, Rotterdam, 1898, and "The Petroleum Industry of Roumania," reprinted from the *Petroleum Review*, April 1899.



## ROUMANIA—continued.

author affords an excellent account of the present state of the petroleum industry. The mineral is obtained partly from shallow hand-dug wells and partly from bore-holes. The principal petroleum centres are Prahova, Bacan, Buzen and Dambovitza; over 92 per cent. of the production in 1904 was from the Prahova district. In 1904 there were 224 productive bore-holes and 744 productive wells. The deepest bore-hole is only 550 metres deep, whilst the wells are often only 20 to 100 metres deep. According to M. Alimanestiano, who is Chief of the Mining Department, the most pressing need of the petroleum industry is the establishment of a pipe-line from the wells to the Danube, or even to Costantza. Given cheap transport, Roumania could supply central Europe with oil at lower prices than any of its competitors. The bulk of the petroleum is refined, and the residue employed in Roumania for heating purposes. A large percentage of the production is sent to other countries, mostly to Great Britain, France, Germany and the Netherlands. In 1903 the total quantities of petroleum exported were—crude, 57,014 tons, valued £68,420, and refined, 46,948 tons, valued at £112,672.\*

*Salt.*—The country is blessed with rich deposits of salt, which extend for a distance of about 100 miles along the Carpathians. One bed of pure rock salt is from 800 to 1,000 feet thick.† The industry is a Government monopoly, and much of the work in the rock salt mines is carried on by convict labour. About 22,000 tons of rock salt are exported annually to Turkey and 3,000 to Russia.

*Stone.*—Roumania has hitherto been largely dependent upon the foreigner for stone and building materials generally, though ample supplies exist in the country itself, especially in the Dobrudja. However, the paving stones from Belgium and France have now been to some extent ousted by native products, in spite of the difficulties which beset the Roumanian quarry-owner in the shape of expensive transport and want of trained workmen. As these obstacles disappear, quarrying may be expected to become an important industry in the country.

There are five important granite quarries in the Dobrudja, and the total number of quarries in the country is shown by the official statistics‡ to be very considerable. There are a few marble quarries.

For centuries the alluvia of many of the rivers have been known to carry gold, and a little of the precious metal is occasionally washed from the sands by the peasantry; but the gold resources of Roumania are as yet unknown. The same may be said of the ores of cobalt, copper, lead, manganese, mercury, iron, and silver, and of the beds of anthracite and coal, which have been found cropping out in various parts of the country.

TABLE 493.

## OUTPUT of MINERALS during the Years 1903, and 1904.§

Mineral	1903.	1904.
	Metric Tons.	Metric Tons.
Lignite ... ..	110,000	—
Petroleum (crude) ... ..	384,303	497,000
Salt .. ...	90,000	—
Stone ... ..	980,000	—

\* Vice-Consul Dundas "Trade of Roumania for the year 1904," *Dipl. and Cons. Reports* No. 3432, Ann. Ser. 1905 [Cd. 2236-176].

† Crémier, *Exposition Universelle de 1900, Paris. Notice sur l'Exploitation du Gisement de sel gemme de la Roumanie présentée au Jury de la Classe 63.*

‡ *Statistica Carierelor din țara*, 1897; Bucharest, 1898.

§ Official Return furnished by the Département de l'Agriculture, du Commerce, de l'Industrie et des Domaines," Bucharest. Complete figures for 1904 not received.

|| Figures for the year 1901.



## Russia.\*

Whether judged by the number of persons employed, or by the value of the products obtained, the workings in Russia for coal, gold, iron ore, manganese ore, petroleum, platinum, and salt, are worthy of much attention.

*Asbestos.*†—Important deposits of asbestos exist in Finland. In the year 1903, 2,028 metric tons, valued at £39,512 were exported from Reval, the greater portion being destined for Great Britain.

*Coal.*—The quantity of coal raised in Russia has risen from 3½ million tons in 1882 to over 19½ million tons in 1904. The most productive coal region of Russia is the Donetz Basin,‡ in the province of Ekaterinoslav. The output of this basin in 1904 was 1,492,258 tons of anthracite and 11,464,839 tons of bituminous coal. Next in importance comes Poland, with an output of 4,705,567 tons§ of true coal and brown coal. The Dombrowa Basin, in Poland, is a continuation of the great Silesian Coal Basin; it is now yielding about 4 million tons a year. These two basins together produced in 1904 over 90 per cent. of the coal of Russia. Other coal regions|| worth mentioning are the Urals, the Eskibastus district south of Omsk, the Kusnetski Basin, in the Government of Tomsk, and the Tkvibulski district, in the Caucasus.

Coal is abundant in Siberia, both east and west, and even along the line of the Trans-Siberian Railway; but the quality is poor. A long list of localities is given by Mr. Cooke in his report upon the Trans-Siberian Railway.¶ The Eskibastus coalfield alone, in the neighbourhood of Pavlodar, on the Irtysh, is estimated to have reserves of more than 3,000 millions of tons.

In the island of Saghalien coal is worked by Russian convicts; the present output is small, and is used for steamships.

*Copper.*—More than 90 per cent. of the copper obtained in Russia in 1902 came from the Urals and the Caucasus. The yield for 1902 from the Caucasus was 107,118 tons of ore and 3,440 tons of metal.\*\*

*Gold.*—In 1902 the output of gold of Russia was 2,128 poods, or 1,120,678 ozs., and according to Mr. Consul Wardrop,†† 1,134,000 ozs. in 1903. The gold is derived mainly from alluvial deposits in the Urals, and in Eastern and Western Siberia; the localities where it is being worked are shown upon a useful map prepared by M. de Batz.‡‡ According to Rickmer,§§ a large number of persons are employed in Eastern Bokhara in washing auriferous gravel. The value of the gold obtained is estimated at £20,000 to £30,000 annually. The production of gold from the Urals in 1902 was 281,742 ozs., and from Siberia 838,385 ozs.

*Iron.*—The present state of the iron industry in Russia is shown by an excellent map drawn by Mr. Archibald P. Head.|||| The deposits of iron ore in various parts of the Empire are enormous. More than 61 per cent. of the pig-iron is produced in the South of Russia, a large quantity of the ore being obtained from the rich deposits in the Krivoy Rog district. In 1902 the total number of blast furnaces at work was 252, and the amount of pig iron produced was 2,598,165 tons.

*Manganese ore.*¶¶—There are two great manganese districts of Russia, one in the province of Kutais and county of Sharapan, which extends over the whole central part of the basin of the River Kvirila, and the other in the province of Ekaterinoslav. The beds of manganese ore are interstratified with sand and clay of Eocene age. The richest deposits cover an area of more than 50 square miles, and the mining district is estimated to contain at least a hundred million tons of workable ore. The ore, as exported, contains about 50 per cent. of metallic manganese, 6 to 9 per cent. of

\* Collection of Statistical Information respecting the Mining and Metallurgical Industries of Russia for the year 1902. St. Petersburg, 1905.

† Consul Cooke, "Trade of Finland for the year 1903." *Dipl. and Cons. Reports*, No. 3278, Ann. Ser., 1904 [Cd. 2236-22], p. 13, and Vice-Consul Soucanton, "Trade of Reval for the year 1903." *Dipl. and Cons. Reports*, No. 3,304, Ann. Ser., 1904 [Cd. 2236-48], p. 14.

‡ Vice-Consul Martin, "Trade of Consular District of Rostov-on-Don for the year 1904." *Dipl. and Cons. Reports*, No. 3,447, Ann. Ser., 1905 [Cd. 2236-191], p. 13.

§ Consul-General Murray, "Trade and Agriculture of Poland Lithuania for the year 1904." *Dipl. and Cons. Reports* No. 3351, Ann. Ser., 1905 [Cd. 2236-95], p. 35.

|| Cooke, "Coal Crisis in Russia." *Dipl. and Cons. Reports*, No. 523, Misc. Ser., 1900 [Cd. 2-6], p. 6.

¶ *Dipl. and Cons. Reports*, No. 533, Misc. Ser., 1900 [Cd. 2-16], p. 17.

\*\* Consul Stevens, "Trade of Consular District of Batoum for the year 1902," *Dipl. and Cons. Reports*, No. 2979, Ann. Ser., 1903 [Cd. 1386-56], p. 8.

†† "Foreign Commerce of Russia and Trade of the Consular District of St. Petersburg." *Dipl. and Cons. Reports*, No. 3253, Ann. Ser., 1904 [Cd. 1766-187], p. 12.

‡‡ "The auriferous deposits of Siberia," *Trans. Am. Inst. M.E.*, Vol. XXVIII., 1898.

§§ "Travels in Bokhara," *Geogr. Jour.*, London, Vol. XIV., 1899, p. 606.

|| "The South Russian Iron Industry," *Jour. Soc. Arts*, Vol. LI. 1902, p. 75.

¶¶ *Caucasian Manganese*. Kutais, 1900. London, 1901.



## RUSSIA—continued.

silica, and 0.12 to 0.17 per cent. of phosphorus. The former district produced 402,311 tons of Manganese ore in 1902. 451,677 tons of ore, valued at £618,906, and 477,564 tons, valued at £660,638, were exported from European Russia in the years 1903 and 1904 respectively.\*

*Peat.*—Though peat may appear an unimportant fuel compared with coal, it nevertheless is so abundant and is so easily obtained in certain localities far removed from railways that it deserves special attention. In Russia there is an office under the Ministry of Agriculture and Domains (*Bureau de l'Industrie des Tourbes*) which supervises the peat industry. Many of the turbaries have been carefully tested by borings, and an official map exhibited at the Paris Exhibition gave information about 113 turbaries, occupying an area of 398 sq. miles (103,000 hectares); several are from 19 to 38 sq. miles (5,000 to 10,000 hectares) in area and over.

The Rojsjo Peat Works are manufacturing compressed peat in Finland.†

*Petroleum.*\*—The production of the oil wells near Baku in 1904 shows an increase compared with the previous year, the total output being 613,899,000 poods (10,055,669 metric tons) of crude oil in 1904 against 596,581,155 poods (9,771,999 metric tons) in 1903. The Sabounchi field was again the most productive of the five oil-fields near Baku. In the five districts there were on an average 1,555 producing wells at work in 1904 and 1,420 in 1903. The average depth of the producing wells in 1903 was 693 feet on the Balakhany field, 994 on the Sabounchi, 1,456 on the Romany, 1,589 on the Bibi-Eibat, and 490 on the Binagadi. Of the total 596½ million poods obtained in the Baku fields in 1903, only 53½ million were derived from wells in which the oil rose to the surface; the remainder had to be drawn up mechanically.

Russia's wealth in petroleum is not confined to the Baku district, wells at Grozny are yielding large quantities of oil, and great hopes are based upon the new oil field near the river Uchta‡ on the boundary of the provinces of Archangel and Wologda.

*Platinum.*—All the platinum is obtained from alluvial deposits in the Urals; the output in 1902 was 196,923 ozs.§ and in 1903 192,711 ozs. Russia produces about 96 per cent. of the world's supply of this metal. At the end of 1904, 12 dredges were at work in the Ural district.\*

*Quicksilver.*—All the quicksilver is obtained at Nikitovsky in the district of Ekaterinoslav, in South Russia; the deposits were first worked in 1885.

*Salt.*—In 1902 more than half the salt produced in Russia was from lakes, especially in the Crimea and the adjacent provinces, and in Astrakhan. Salt is likewise obtained by evaporating brine pumped up from boreholes, and by mining beds of rock-salt. The quantity of rock and boiled salt produced from the mines near Slaviansk and Bachmut in the Ekaterinoslav district was 513,340 tons in 1903, and 481,550 tons in 1904.||

In Western Siberia salt is obtained from a number of lakes which partially dry up in summer and in hot years deposit crusts of salt from two to four inches thick. The great Burlinsk Lake yields 20,000 tons yearly in this fashion.¶

In Eastern Siberia the salt is obtained from springs, and from deposits of rock salt.¶

*Sulphate of sodium.*—Nearly 54 per cent. of the output in 1902 came from the Government of Tomsk; the great Marmischanski Lake is estimated to contain more than a million tons of sulphate of sodium; about 1,600 tons are obtained from it annually, and some of it is used for making soda.¶

*Sulphur.*\*\*—Native sulphur occurs in various parts of the Empire; it is worked in Daghestan and at Czarkowsky, in the Government of Kielce, near the Austrian frontier.

*Zinc ore.*\*\*—The zinc ore is obtained from deposits of calamine in Poland. New and extensive deposits have recently been discovered in the Government of Kielce. The smelting works obtained 10,067 tons in 1903 and 10,443 tons in 1904.

\* Consul Stevens, "Trade of Consular District of Batoum for the year 1902," *Dipl. and Cons. Reports*, No. 2979, Ann. Ser. 1903 [Cd. 1386-56], and Consul Wardrop "Trade of the Consular District of St. Petersburg for the year 1904," *Dipl. and Cons. Reports*, No. 3424, Ann. Ser., 1905 [Cd. 2236-168].

† Consul Cooke. *Op. cit.* No. 3278, p. 12.

‡ B. von Vangel, "Petroleum in the Uchta District." *Boring & Drilling*, Vol. II., 1901, p. 89.

§ Consul Wardrop. *Op. cit.* No. 3253, p. 12.

|| Consul Brophy. *Op. cit.* No. 3173, p. 28, and Vice-Consul Martin, *Op. cit.* No. 3447, p. 12.

¶ Thiess, "Die Salzgewinnung in Siberien." *Zeitschr. B. H. Salinenwesen*, Vol. XLVI., 1898, p. 249.

\*\* Consul-General Murray, "Trade of Warsaw and District for the year 1897," *Dipl. and Cons. Reports*, No. 2135, Ann. Ser., 1893 [C. 8648-157], and "Trade and Agriculture of Poland and Lithuania for the year 1904," *Dipl. and Cons. Reports*, No. 3351, Ann. Ser., 1905 [Cd. 2236-95].



## RUSSIA—continued.

TABLE 494.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1901 and 1902.\*

Kind of Mineral working.	Persons Employed during the Year.	
	1901.	1902.
Asbestos ... ..	1,089	1,380
Asphalt ... ..	629	424
China clay ... ..	63	449
Coal ... ..	118,685	105,688
Cobalt, chrome, iron, &c. ... ..	1,207	1,317
Copper ore ... ..	6,351	6,729
Fire clay ... ..	6,272	8,380
Gold ... ..	86,720	86,770
Iron ore ... ..	46,381	38,603
Manganese ... ..	3,715	3,123
Naphtha ... ..	30,792	24,560
Phosphorite ... ..	576	304
Platinum ... ..	2,025	1,803
Quicksilver ... ..	723	899
Salt ... ..	15,957	21,957
Sulphur ... ..	203	166
Silver-lead ore ... ..	1,739	1,525
Stone Quarries ... ..	43,621	38,944
Zinc ore ... ..	1,399	1,224
Total ... ..	368,147	344,245

TABLE 495.

PERSONS EMPLOYED at GOLD MINES during the Years 1901 and 1902.\*

Year.	Number of Persons Employed.				
	Urals.	West Siberia.	East Siberia.	Finland.	Total.
1901 ... ..	37,021	12,710	36,960	29	86,720
1902 ... ..	39,086	10,429	37,200	55	86,770

TABLE 496.

QUANTITY and VALUE of MINERALS produced during the Years 1901 and 1902.\*

Mineral.	District whence Obtained.	1901.		1902.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	£	Metric Tons.	£
Asbestos .. ..	Ural .. ..	4,399	41,820	4,507	43,006
Asphalt and mineral pitch.	Syzran, Caucasus .. ..	26,622	51,521	12,360	24,038
China clay .. ..	Ekaterinoslav, Volyn, Chernigov, Kieff Cherson .. ..	17,395	20,831	20,231	24,345
Chrome ore .. ..	Perm, Orenburg .. ..	22,169	14,235	19,655	12,685
Coal { Anthracite .. Coal .. Lignite .. }	Donetz, Poland, Moscow, Ural Kieff, Turkestan, Tomsk, Caucasus, Kirgiz Steppe, Saghalien, Eastern Siberia. }	16,526,636	6,664,422	16,465,836	5,837,632

\* Collection of Statistical Information respecting the Mining and Metallurgical Industries of Russia for the year 1902, St. Petersburg, 1905. Later figures, except those relating to output of coal, gold, iron, petroleum, platinum and zinc (see Table 497) are not available.



## RUSSIA—continued.

silica, and 0.12 to 0.17 per cent. of phosphorus. The former district produced 402,311 tons of Manganese ore in 1902. 451,677 tons of ore, valued at £618,906, and 477,564 tons, valued at £660,638, were exported from European Russia in the years 1903 and 1904 respectively.\*

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\* Consul Stevens, "Trade of Consular District of Batoum for the year 1902." *Dipl. and Cons. Reports*, No. 2979, Ann. Ser. 1903 [Cd. 1336-56], and Consul Wardrop "Trade of the Consular District of St. Petersburg for the year 1904." *Dipl. and Cons. Reports*, No. 3474, Ann. Ser., 1905 [Cd. 2236-168].

† Consul Cooke. *Op. cit.* No. 3278, p. 12.

‡ B. von Vangel, "Petroleum in the Uchta District." *Boring & Drilling*, Vol. II., 1901, p. 89.

§ Consul Wardrop. *Op. cit.* No. 3253, p. 12.

|| Consul Brophy. *Op. cit.* No. 3173, p. 28, and Vice-Consul Martin, *Op. cit.* No. 3447, p. 12.

¶ Thiess, "Die Salzgewinnung in Siberien." *Zeitschr. B. H. Salinenwesen*, Vol. XLVI., 1898, p. 249.

\*\* Consul-General Murray, "Trade of Warsaw and District for the year 1897." *Dipl. and Cons. Reports*, No. 2135, Ann. Ser., 1893 [C. 8648-157], and "Trade and Agriculture of Poland and Lithuania for the year 1904." *Dipl. and Cons. Reports*, No. 3351, Ann. Ser., 1905 [Cd. 2236-95].



## RUSSIA—continued.

TABLE 496—continued.

QUANTITY and VALUE of MINERALS produced during the Year 1901 and 1902—  
continued.

Mineral.	District whence Obtained.	1901.		1902.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	£	Metric Tons.	£
Cobalt ore and regulus	Caucasus .. .. .	216	(Not stated.)	—	—
Copper .. .. .	Ural, Kirghiz Steppe, Olonets, Western Siberia, Turkestan, Caucasus, Finland.	8,467	770,851	8,817	754,908
Gold .. .. .	Ural, Eastern and Western Siberia, Finland .. .. .	Kil. 39,140	4,651,682	Kil. 34,857	4,163,278
Iron (pig).. .. .	Ural, Central Russia, Poland, Southern Russia, Northern Russia, Siberia, Finland.	2,866,776	11,148,823	2,568,165	9,046,195
Iron pyrites .. .. .	Ural, Toula, Novgorod .. .. .	30,732	22,083	26,465	19,680
Lead .. .. .	Tomsk, Transbaikai, Kirghiz Steppe, Caucasus, Turkestan	166	1,925	225	2,462
Manganese ore .. .. .	Kutais, Ural, Ekaterinoslav .. .. .	523,395	147,292	536,518	155,883
Petroleum .. .. .	Caucasus, Transcaspien, Turkestan .. .. .	11,510,600	6,062,104	11,110,318	4,858,237
Phosphorite .. .. .	Bessarabia, Kostroma, Podolia, Smolensk .. .. .	21,276	14,940	13,709	10,029
Platinum .. .. .	Ural .. .. .	Kil. 6,355	623,721	Kil. 6,128	503,754
Quicksilver .. .. .	Ekaterinoslav .. .. .	363	100,842	416	59,123
Salt { Rock salt Lake salt Salt from brine }	Astrakhan, Perm, Ekaterinoslav, Ormen, Kharkov, Orenburg, Tomsk, Caucasus, &c.	1,705,922	739,089	1,847,019	801,368
Silver .. .. .	Tomsk, Transbaikai, Kirghiz Steppe, Caucasus, Finland ..	Kil. 1,097	4,383	Kil. 1,196	4,349
Sulphate of sodium ..	Tiflis, Kuban, Tomsk, Vologda .. .. .	6,959	4,061	4,420	3,118
Sulphur .. .. .	Daghestan, Poland, Turkestan .. .. .	2,489	14,392	1,800	11,020
Tin .. .. .	Finland .. .. .	—	—	8	1,096
Zinc .. .. .	Poland .. .. .	6,104	122,568	8,264	265,053
	Total Value .. .. .	—	31,219,985*	—	26,599,138

The value of the output from quarries in the years 1901 and 1902 is given in the Russian Statistical Volume as 3,880,301 roubles (£408,240) and 5,041,906 roubles (£532,971) respectively, but these figures are really too low, as they do not include the produce of quarries in the St. Petersburg Olonetz district and in South-Eastern Russia.

TABLE 497.

QUANTITIES of certain MINERALS obtained during the years 1903 and 1904.†

Mineral.	1903.	1904.
	Metric Tons.	Metric Tons.
Coal ... ..	17,818,000	19,318,370
Copper† ... ..	10,320	10,700
Gold ... ..	Kilos. 35,271	Not stated.
Iron (pig) ... ..	2,443,594	2,978,325
Manganese ore (exported) ... ..	458,925	485,228
Petroleum ... ..	9,771,999	10,055,669
Platinum ... ..	Kilos. 5,994	Kilos. 4,775§
Silver ... ..	Kilos. 4,724	Not stated.
Zinc ... ..	10,229	10,611

\* Excluding value of cobalt ore and regulus.

† Information obtained from Consular and other Reports.

‡ Return compiled by H. B. Merton &amp; Co.

§ Output for 10 months only.



## RUSSIA—continued.

TABLE 498.

DEATHS from ACCIDENTS at the MINES and other WORKINGS for MINERALS  
during the Years 1901 and 1902.\*

Kind of Mines and Workings.	Number of Persons Killed.		Death-rate per 1,000 Persons Employed.	
	1901.	1902.	1901.	1902.
Coal Mines... ..	327	267	2.76	2.53
Gold and Platinum ... ..	35	55	.39	.62
Other Mines and Workings ... ..	103	71	.88	.64
Quarries .. ..	49	36	1.12	.92
Total ... ..	514	429	1.40	1.25

Owing to the numerous explosions of firedamp in the Russian coal mines a permanent commission was appointed in 1901 by the Russian Government and attached to the Scientific Mine Committee of the Mining Department of the Ministry of Agriculture and Domains, in order to study the best means of preventing such accidents. In 1904 the Commission issued a Preliminary Report† relating to the investigations made by mining engineers, A. Skotchinsky and N. Podkopaëff, at certain mines in the Douetz Basin.

## Saba. (See DUTCH WEST INDIES.)

## Sahara.‡

There are three important salt deposits in the Sahara, all of which are due to the natural evaporation of salt lakes, viz., the Sebka d'Idgil, which supplies Western Africa; the Taodeni bed, which furnishes salt to the Sahel, the Niger district, and the Congo; and lastly, the Sebka de Bilma, which sends its produce to the east and the region of Lake Tchad.

## Sandwich Islands.§

The mineral industries of the Sandwich Islands are of slight importance. There are large deposits of gypsum, and red and yellow ochre; sulphur is found around the volcanoes.

The extraction of salt from sea water is carried on to supply local wants.

## Santo Domingo.||

The Island contains very rich mineral deposits, but, owing to a lack of means of communication between the interior and the ports, they have not been thoroughly worked. In addition to coal, asbestos and phosphate, the ores of copper, gold and iron have recently been discovered.

## Saxony. (See GERMAN EMPIRE.)

## St. Martin. (See DUTCH WEST INDIES.)

\* Collection of Statistical Information respecting the Mining and Metallurgical Industries of Russia for the year 1902. St. Petersburg, 1905. Later figures are not available.

† St. Petersburg, 1904.

‡ Dastre, "Le Sel," *Revue des Deux Mondes*, Vol. LXXI., 1901, p. 219.

§ Day, "Mineral Resources of the Antilles, Hawaii, and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.

|| Consul-General Vansittart, "Trade of Hayti and Santo Domingo for the year 1904." *Dipl. and Cons. Reports*, No. 3385, Ann. Ser., 1905 [Cd. 2336-129], p. 11.



### Senegal.\*

Alluvial deposits of gold exist in various parts of Senegal, and especially in the valley of the Falemé river, where the metal is extracted on a small scale by the natives. In 1903, the value of the gold exported was £22,803.

### Servia.†

According to an official map Servia is richly endowed with mineral wealth ; but until railways have been constructed and the existing cart roads improved it is idle to expect that it will become a great mining country. It possesses deposits of the ores of antimony, arsenic, chromium, copper, gold, iron, lead and mercury, besides coal, graphite, gypsum, magnesite, sulphur, marble and other stones for ornamental and building purposes.

*Coal.*—Most of the coal region lies near the Danube, which enables the mineral to be shipped down the river to districts requiring fuel and to the Black Sea. The most important workings are at Dobra, on the Danube. The coal is of Liassic Age.

True coal, said to be almost as good as English coal, occurs and is worked in the Timok Valley, near Tschuka. In the Boljevac district a coal basin extending over a large area has recently been discovered.

Vice-Consul Thesiger states‡ that Servia is rich in mines of brown coal which might be worked to a much larger extent than at present. Thick beds of Tertiary lignite occur at Senje, Sisovac, Jelasnica, and in many other parts of the country.

*Copper and Iron.*—The ores of these two metals have been worked in the neighbourhood of Maidanpek. At Bor to the south of Maidanpek copper ore has been discovered in several quartz veins in a mass of andesite.§

*Gold.*—This was worked in Servia by the Romans, and then many centuries later by the Austrians. Turkish invasions put a stop to mining, but now there are signs of a revival and extension of the industry. The gold is found in alluvial gravel and in quartz veins, especially in the district west of the River Timok, which forms the frontier of Bulgaria. Near Glogovica there are many veins of gold-bearing pyrites.

Gold-dredging operations on the River Pek have now been started.

TABLE 499.

PERSONS EMPLOYED at MINES during the Years 1903 and 1904.

Year.	Under and Above-ground.
1903 ... ..	2,316
1904 ... ..	2,019

In addition to the above, there were about 120 persons employed at quarries.

\* Consul Cromie, "Trade of Senegal for the year 1903." *Dipl. and Cons. Reports*, No. 3312, Ann. Ser., 1904 [Cd. 2236-56].  
† Official return furnished by the Mining Department of the Ministry of Agriculture, Commerce and Industry, Belgrade;  
Consul Macdonald, "Trade of Servia for the years 1897-98." *Dipl. and Cons. Reports*, No. 2207, Ann. Ser., 1899 [C 9044-33];  
Antula, *Revue générale des gisements métallifères en Serbie*. Paris, 1900; and Jastrow, "The Mining Industries of Servia."  
*Eng. Min. Jour.*, Vol. LXX., 1900, p. 523.

‡ "Trade of Servia for the year 1902 and first nine months of 1903." *Dipl. and Cons. Reports*, No. 3139, Ann. Ser., 1904 [Cd. 1766-73], p. 14.

§ Antula, *Les gisements de cuivre dans les environs de Bor et de Kricelj*, Belgrade, 1904.



## SERVIA—continued.

TABLE 500.

QUANTITY and VALUE of MINERALS produced during the Years 1903 and 1904.

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony (regulus) ... ..	279	206,280	400	194,920
" (oxide)... ..	65		72	28,847
Brown coal ... ..	92,568	898,783	108,585	820,741
Cement ... ..	(a)	—	5,250	160,000
Coal... ..	40,962	674,289	43,529	663,876
Copper (metal) ... ..	192	289,026	164	272,339
" ore... ..	—	—	50	2,000
Gold (fine)... ..	Kilos. 11	34,802	Kilos. 85	258,236
Lead ... ..	82	25,118	25	9,817
Lignite ... ..	26,298	132,057	31,090	147,492
Millstones ... ..	(a)	—	450	32,000
Silver (metal) ... ..	(a)	—	Kilos. 48	5,018
Total value in francs ... ..	—	2,260,355 (b)	—	2,595,286
" " £ sterling ... ..	—	£90,414	—	£103,811

(a) Not stated. (b) Incomplete.

TABLE 501.

DEATHS from ACCIDENTS at MINES during the Years 1903 and 1904.

Year.				Number of Deaths.	Death-rate per 1,000 Persons Employed.
1903	...	...	...	2	·86
1904	..	...	...	6	2·97

## Siam.\*

Mining in Siam is, at the present time, practically confined to tin, gems (sapphires and rubies) and gold, although several other minerals exist and have been worked in the country.

*Coal.*—No true coal is known to occur in Siam. Lignite or brown coal is found at Bandon, Gerbi, Plien, Trang, in the Malay Peninsula.

*Copper.*—The chief deposits are situated at Chan Tuk and in the Chiangmai district, but none are being worked at the present time.

*Gold.*—The precious metal is very widely distributed. Alluvial gold is worked principally in Pu Kiri, Bangtaphan, Kow Suplu, Watana and Tomoh districts. Reef mining is carried on by Chinese in the latter district, and a European company is developing a property containing several veins in the Sisaphon district.

*Gems.*—The chief ruby workings are in Chantaboon and Kratt, but the sapphires are nearly all obtained from the Phalin district in Battambang. Most of the work, which consists of digging small pits in the neighbourhood of streams and washing the

\* Information furnished by the Royal Department of Mines and Geology, Bangkok.



## SIAM—continued.

gem-bearing earth by hand, is carried on by Burmese and Shans, who, however, employ a considerable number of Laos as labourers. The value of the output of gems is estimated to be about £300,000 annually.

*Iron.*—In ancient times there was a considerable amount of iron mining, but now there are only a few places where it is carried on, and the industry is on quite a small scale.

*Lead.*—So far as it is known veins of argentiferous galena have been worked only in the Malay State of Jalar.

*Petroleum.*—A small quantity of petroleum is found in Muang Fang; the oil is obtained by skimming the water which collects in shallow pits dug for the purpose.

*Tin.*—This is the only metal of any importance in Siam. The mines of the State are chiefly situated in the Siamese Malay Provinces, along the edge of the granites of the main ridge which forms the watershed of the peninsula. Tin is also found in small quantities in the valley of the Nam Sak river and in Northern Siam. Puket Island, on the West Coast, is the principal tin-mining centre at present.

TABLE 502.

APPROXIMATE NUMBER of PERSONS employed at MINES and MINERAL WORKINGS during the Year 1904.

Kind of Workings.	Underground.	Above Ground.	Total.
Gold Mines .. ...	300	800	1,100
Iron ore workings ... ..	—	50	50
Other workings ... ..	—	25,100	25,100
Total ... ..	300	25,950	26,250

TABLE 503.

APPROXIMATE QUANTITY and VALUE of MINERAL obtained during the Year 1904.

Mineral.	Quantity.	Value.
Gold (Fine) .. ...	78 Kilos.	£ 10,000
Tin ore ... ..	8,000 Metric Tons	450,000

No statistics of accidents at mines and mineral workings are obtainable.

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Singkep. (See DUTCH EAST INDIES.)

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Soudan. (See EGYPT, AND SAHARA.)

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## Spain.\*

Spain is justly celebrated for its mineral wealth. It produces more cupreous pyrites than any other country in the world, and very large amounts of lead ore and quicksilver; its iron ores are abundant and of excellent quality, and it has of recent years become an important supplier of manganese ores.

The total number of persons employed in and about mines in Spain during the year 1904 was 93,375.

*Coal.*—Eight provinces produced coal in 1904. The total output was nearly three million tons, more than half coming from the province of Oviedo. Anthracite is worked on a small scale in the provinces of Cordova and Palencia and lignite in nine provinces; but the total output is insignificant.

*Copper.*—The Rio Tinto mines and its neighbours show no signs of impoverishment, for the output of the province of Huelva was 2,624,512 tons. Compared with this figure, the production of the other copper-bearing provinces, such as Seville, &c., is small.

*Gold.*—Mines exist in the province of Corunna, but no gold was obtained in 1904.

*Iron Ore.*—The province of Biscay, which includes the Bilbao district, is the great stronghold of the iron industry in Spain; most of the workings are open quarries, and the ores worked are red and brown haematite and siderite. The total output of the province in 1904 was 4,554,951 tons, which is a decrease of 299,757 tons compared with the previous year. More than half this quantity was exported to the United Kingdom.

Next in importance after Biscay comes the province of Santander with an output of 1,114,251 tons.

*Lead.*—Most of the lead comes from the provinces of Almeria, Badajos, Ciudad Real, Cordova, Jaen, Murcia, and Tarragona; much of the ore, and especially that of Murcia, contains a notable amount of silver.

*Manganese Ore.*—Mining for manganese is almost entirely confined to the province of Huelva. The output of the province in 1904 was 18,730 tons, or only about one-fifth of that of five years ago. The decrease is due to the fact that the price having fallen to such an extent, consumers find it more profitable to use the richer Caucasian and Indian ores instead of the Huelvan ore, which contains only 30 per cent. of metal.

*Marble.*—Consul Haggard reports † that the province of Malaga produces some very fine marble, but greater facilities for transport are needed for working the deposits.

*Quicksilver.*—From time immemorial the Almaden mine, in the province of Ciudad Real, has been renowned as a producer of cinnabar. The other quicksilver mines are of comparatively little importance; several are worked in the province of Oviedo.

*Salt.*—Much of the salt is obtained from sea water, especially in the provinces of Cadiz and Alicante.

*Sulphur.*—In addition to the sulphur contained in cupreous iron pyrites, Spain has mines of native sulphur in the provinces of Albacete, Almeria, Murcia and Biscay.

*Tin Ore and Wolfram.*—These two minerals occur together in the provinces of Corunna, Pontevedra and Salamanca, and tin ore in the province of Caceres.

*Zinc.*—Murcia still retains its position as the principal zinc-producing province, Santander taking the second place. The two provinces between them produce nearly nine-tenths of the country's total.

TABLE 504.

PERSONS EMPLOYED at MINES during the Years 1903‡ and 1904.§

Year.			Men.	Women.	Boys.	Total.
1903	...	...	88,244	2,779	3,341	94,364
1904	...	...	86,862	2,770	3,743	93,375

\* *Estadística Minera de España correspondiente al año de 1904*, Madrid, 1905.

† "Trade of the Consular District of Malaga for the year 1904." *Dipl. and Cons. Reports*, No. 3,458, Ann. Ser. 1905. [Cd. 2236-202], p. 16.

‡ *Estadística Minera de España correspondiente al año de 1903*, Madrid, pp. 26 and 27.

§ " " " " " 1904, " pp. 26 and 27.

SPAIN—continued.

TABLE 505.

PERSONS EMPLOYED in the PRINCIPAL MINING INDUSTRIES during the Years 1903\* and 1904.†

Kind of Mines.	1903.				1904.			
	Men.	Women.	Boys.	Total.	Men.	Women.	Boys.	Total.
Brown coal ... ..	1,058	36	19	1,113	1,005	31	15	1,051
Coal and anthracite ...	19,955	1,227	474	21,656	19,695	1,238	449	21,382
Copper ore and cupreous pyrites.	11,591	268	282	12,141	11,729	272	319	12,320
Iron ore ... ..	28,739	126	1,208	30,073	29,528	113	1,372	31,013
Lead ore ... ..	18,651	633	834	20,118	18,336	508	1,263	20,107
Quicksilver ore ... ..	1,663	—	81	1,744	1,581	—	54	1,635
Zinc ore ... ..	2,554	234	183	2,971	2,623	317	101	3,041
Other mines ... ..	4,033	255	260	4,548	2,365	291	170	2,826
Total ... ..	88,244	2,779	3,341	94,364	86,862	2,770	3,743	93,375

TABLE 506.

QUANTITY and VALUE of MINERALS produced during the Years 1903\* and 1904.†

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Pesetas.	Metric Tons.	Pesetas.
Aluminous earths ... ..	381	11,314	925	24,274
Amblygonite ... ..	17	516	90	1,800
Anthracite ... ..	108,959	1,216,720	119,096	1,451,138
Antimony ore ... ..	42	3,008	245	14,550
Arsenical pyrites ... ..	7,996	39,980	3,510	47,921
Asphalt (rock) ... ..	6,277	62,770	3,761	37,610
Barium sulphate ... ..	507	5,310	453	9,846
Bismuth... ..	Kilos 2,500	1,250	Kilos. 4,600	2,300
Bituminous shale ... ..	360	4,375	100	1,250
Brown coal ... ..	104,232	592,831	100,673	629,388
China clay ... ..	2,573	13,672	1,700	10,000
Clay ... ..	640	4,020	2,369	3,930
Coal ... ..	2,587,652	23,640,360	2,903,771	28,099,625
Cobalt ore ... ..	—	—	25	1,250
Copper ore ... ..	3,056	284,633	21,614	1,121,750

\* Estadística Minera de España correspondiente al año 1903, Madrid, pp. 26 and 27.  
† " " " " " 1904, " pp. 26 and 27.

## SPAIN—continued.

QUANTITY and VALUE of MINERALS produced during the Years 1903 and 1904—  
continued.

Mineral.	1903.		1904.	
	Quantity	Value.	Quantity.	Value.
	Metric Tons.	Pesetas.	Metric Tons.	Pesetas.
Cupreous iron pyrites... ..	2,796,733	52,027,667	2,624,512	41,467,289
Fluor spar ... ..	4,000	40,000	—	—
Garnet ... ..	185	3,700	100	2,000
Gold ore... ..	2,681	92,025	—	—
Graphite ... ..	—	—	30	270
Iron ore ... ..	8,304,153	43,380,242	7,964,748	42,116,866
Iron pyrites ... ..	155,739	692,690	161,841	676,469
Jet ... ..	kilos. 1,500	219	—	—
Lead ore... ..	108,660	12,119,469	93,230	10,282,409
Lead ore, argentiferous ... ..	179,858	29,893,553	177,104	27,885,347
Magnesium carbonate ... ..	2,260	6,900	1,129	3,838
Manganese ore ... ..	26,194	458,389	18,732	132,039
Mineral waters... ..	21,791,346	816,756	22,480,696	903,932
Phosphorite ... ..	1,124	30,920	3,305	99,150
Pumice stone ... ..	30	300	6	60
Quicksilver ore... ..	30,370	4,716,317	27,185	3,961,946
Salt ... ..	427,394	3,472,782	543,674	3,825,639
Silver ore ... ..	231	289,540	303	630,547
Silver ore, ferruginous ... ..	90,996	333,047	122,109	448,524
Sodium sulphate ... ..	24	1,127	351	4,585
Steatite ... ..	3,725	11,175	5,165	15,495
Sulphur rock ... ..	38,573	214,191	40,389	231,254
Tin ore (dressed) ... ..	330	165,000	229	114,500
Topaz ... ..	kilog. 90	8,749	—	—
Tungsten ore (Wolfram) ... ..	—	—	60	18,215
Vanadium ... ..	181	67,694	5	1,700
Zinc ore ... ..	154,126	5,234,831	156,329	6,177,805
Total values in Pesetas ... ..	—	179,958,042	—	170,456,511
“ “ „ £ sterling ... ..	—	£7,198,322	—	£6,818,260



SPAIN—continued.

TABLE 507.  
DEATHS from ACCIDENTS at MINES during the Years 1903 and 1904.\*

Year.	Number of Deaths by Accidents.	Number of Persons seriously Injured.	Death-rate per 1,000 Persons Employed.
1903..   ...   ...   ...   ...	240	271	2·54
1904...   ...   . .   ...   ...	322	495	3·45

TABLE 508.  
DEATHS from ACCIDENTS at MINES, classified according to CAUSE, during the Years  
1903 and 1904.†

Cause.	1903.		1904.	
	Number of Deaths by Accidents.	Percentage of Total.	Number of Deaths by Accidents.	Percentage of Total.
Falls of ground   ...   ...   ...   ...	59	24·5	99	30·7
Explosions of firedamp   ...   ...   ...   ...	15	6·2	84	26·1
Blasting   ...   ...   ...   . .   ...   ...	21	8·8	15	4·7
Suffocation by gases   ...   ...   ...   ...	4	1·7	8	2·5
Irruptions of water   ...   ...   ...   ...	4	1·7	1	·3
Falling down shafts   ...   ...   ...   ...	37	15·4	31	9·6
Breaking of machinery, &c.   ...   ...   ...	22	9·2	17	5·3
Miscellaneous   ...   ...   ...   ...   ...	78	32·5	67	20·8
Total   {...   ...   ...	240	100·0	322	100·0

The increase in the death-rate in Table 507 is explained by the circumstance that 2 serious explosions of firedamp happened in Spanish mines during the year 1904, one in April at Reunion Mine in the province of Seville by which 63 persons were killed, and the other in June at Melendremos Mine in the province of Oviedo by which 13 persons lost their lives.

Spanish Possessions. (See CANARY ISLANDS.)

Spitzbergen.‡

Coal has been discovered in several places in Spitzbergen. Bear Island is said to possess workable seams of excellent coal.

Sumatra. (See DUTCH EAST INDIES.)

Surinam. (See DUTCH GUIANA.)

\* *Estadística Minera de España correspondiente al año 1903, and año 1904*, Madrid, p. 30  
† *B. u. k. Zeitung*. " 1903, " " " " pp. 32 and 33.  
‡ *B. u. k. Zeitung*. Vol. LIX., 1900, p. 476.

## Sweden.\*

*Coal.*—All the Swedish collieries are in Scania, the most southerly province of the kingdom. The seams, which are of Rhætic Age, are interstratified with beds of fire-clay, and the two minerals are worked together.† The thickness of the coal seams, including the partings of shale, varies from three to five feet.

*Copper.*—The well-known Stora Kopparberg mine close to Falun furnishes much of the copper of Sweden, some of the silver, and nearly all of the gold.

*Iron ore.*—Sweden has long been famous as an iron-producing country, and its reputation is due partly to the excellence of its ores and partly to the fact that charcoal is employed almost exclusively as the fuel for the blast furnaces. Sweden likewise exports much iron ore, but new blast furnaces are now being erected which will enable Gellivare ores of low percentage of metal to be treated within the country by a process known as the "Gröndahl method." Of the total output of 4,084,647 tons in 1904, the big workings at Gellivare and Kirunavara in Lapland furnished more than 56 per cent. The Kirunavara workings shipped 1,229,989 tons from Narvik on the Ofoten Fjord in Norway; 387,000 tons of this quantity were destined for the Netherlands, 365,100 tons for Germany, and 239,400 tons for the United Kingdom.‡ The province of Kopparberg with its numerous mines, which furnished nearly a million tons of ore in 1904, comes next in importance to Lapland.

The quantity of iron ore in the principal Norbotten and Central Swedish mines is estimated by Professor Törnebohm to be about 1,200 million tons.§

*Peat.*—The table of production takes no account of either the peat diggings or of the stone quarries. Peat is largely dug for use as household fuel, and for making peat-litter and peat-mould; it was also used extensively on the State locomotives during 1904.§

*Stone.*—Granite, using the word in its commercial sense, is quarried on the West Coast of Sweden, and also on the Baltic, and forms an important article of export. Porphyry and marble are also products of Sweden.

*Zinc.*—The Ämmeberg mines supply most of the zinc ore, which is exclusively blende.

TABLE 509.

PERSONS EMPLOYED at various MINES and FELDSPAR QUARRIES during the Years 1903 and 1904.

Year.	Kind of Workings.	Under-ground.			Above-ground.			Totals.
		Men.	Young Persons under 18.	Total.	Men.	Women and Young Persons under 18.	Total.	
1903	Coal mines ... ..	1,526	161	1,687	469	48	517	2,204
"	Iron " ... ..	4,193	128	4,321	4,826	983	5,809	10,130
"	Other " ... ..	921	1	922	643	278	921	1,843
"	Feldspar quarries ...	74	—	74	104	67	171	245
	Total for 1903 ...	6,714	290	7,004	6,042	1,376	7,418	14,422
1904	Coal mines ... ..	1,478	146	1,624	450	48	498	2,122
"	Iron " ... ..	4,081	105	4,186	4,884	990	5,874	10,060
"	Other " ... ..	817	—	817	689	259	948	1,765
"	Feldspar quarries ...	72	—	72	134	72	206	278
	Total for 1904 ...	6,448	251	6,699	6,157	1,369	7,526	14,225

\* *Bidrag till Sveriges Officiella Statistik för år 1904*, Stockholm, 1905.

† Nordenström, *L'industrie minière de la Suède*, Stockholm, 1897.

‡ Consul MacGregor, "Trade of Stockholm and Eastern Coast of Sweden" for the year 1904. *Dipl. and Cons. Reports* No. 3412, Ann. Ser., 1905 [Cd. 2236-156], pp. 6 and 18.

§ Consul Duff, "Trade of Consular District of Gothenburg for the year 1904." *Dipl. and Cons. Reports*, No. 3,450, Ann. Ser., 1905 [Cd. 2236-194], p. 9.

SWEDEN—continued.

TABLE 510.

QUANTITY of MINERALS obtained from MINES and FELDSPAR QUARRIES during the Years 1903 and 1904.

Mineral.	Year.			
	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum ... ..	140	12,755	125	11,476
Apatite ... ..	3,219	32,191	2,929	23,429
Coal ... ..	320,390	2,530,337	320,984	2,426,697
Copper ore ... ..	36,687	331,725	36,834	368,200
Copper, sulphate ... ..	1,171	392,256	1,248	405,700
Feldspar ... ..	19,392	218,944	18,021	201,360
Fire clay... ..	172,718	328,759	166,868	323,105
Graphite (raw and dressed) ... ..	25	3,685	55	6,550
Iron ore ... ..	3,677,841	16,626,381	4,084,647	21,517,163
Iron pyrites ... ..	7,793	46,000	15,957	159,570
Iron, sulphate ... ..	62	3,444	148	6,648
Manganese ore ... ..	2,244	36,550	2,297	35,500
Manganese ore in powder ... ..	332	13,200	174	7,000
Silver and lead ore ... ..	9,792	191,005	8,187	174,054
Sulphur ... ..	—	—	35	2,792
Zinc ore ... ..	62,927	2,233,681	57,634	2,461,925
Zinc ore (calcined) ... ..	30,429	1,900,925	32,427	2,255,715
Zinc, sulphate ... ..	79	4,750	—	—
Other minerals ... ..	—	—	200	58,110
Total value in crowns ... ..	—	24,906,588	—	30,444,994
“ “ £ sterling ... ..	—	£1,368,494	—	£1,672,802

TABLE 511.

PERSONS KILLED and INJURED by ACCIDENTS at MINES and FELDSPAR QUARRIES during the Years 1902 and 1903.

Year.		Number of Persons Killed.	Number of Persons Injured.*	Death-rate per 1,000 Persons Employed.
1903	... ..	25	457	1.73
1904	... ..	22	504	1.55

Switzerland.†

That the mineral industries of Switzerland are of little importance is evident from the following tables ; nevertheless the kinds of mineral which are being obtained from underground workings are numerous, viz.: anthracite, bituminous limestone, brown coal, fireclay, gypsum, iron ore, limestone, magnesium sulphate, marble, marl, potstone, salt, sandstone, and slate.

\* Injuries causing absence from work for 14 days at least.  
† *Rapports des Inspecteurs Fédéraux des Fabriques et des Mines dans les années 1902 et 03, Aarau, 1904; Notice sur les exploitations minérales de la Suisse, Geneva, 1896, and information furnished by the Swiss Government.*



SWITZERLAND—continued.

*Anthracite.*—Two mines, Chandoline and Granges, produce annually 1,500 to 2,000 tons of anthracite containing a high percentage of ash.

*Bituminous limestone.*—The asphalt rock of the Val de Travers, which is exported from Switzerland to various countries, is a bituminous limestone of Cretaceous age. The bed is 4 to 8 m. thick, and contains about 10 per cent. of bitumen.

*Brown coal and cement.*—With reference to the Swiss brown coal, which is of Miocene age, it is interesting to learn that seams of only 4 to 6 inches in thickness were worked for many decades near the towns of Zurich and Lausanne, and probably with profit. Nowadays the beds immediately underlying and overlying the coal are worked with it, and are used for making Roman cement, Portland cement, bricks, and manure. Deposits of brown coal are worked at Uznach in the Canton of St. Gall.

*Iron.*—The only workings for iron are at Delsberg.

*Salt.*—Switzerland possesses five workings for salt, viz., Bex salt mine in the Rhone valley ; the brine wells of Rheinfelden, Ryburg, and Kaiseraugst, in the Canton Aargau ; and the brine well Schweizerhalle in the Canton Baselland. The output for 1902 was 50,990 tons.

TABLE 512.

NUMBER of PERSONS EMPLOYED at MINES and UNDERGROUND QUARRIES during the Years ended 31st March, 1903 and 1904.

Kind of Workings.	1903.		1904.	
	Number of Works.	Number of Persons Employed.	Number of Works.	Number of Persons Employed.
Mines ... ..	16	448	12	362
Underground quarries ...	93	1,239	63	1,006
Total ... ..	109	1,687	75	1,368

TABLE 513.

NUMBER of WORKINGS and PERSONS EMPLOYED, classified according to MINERAL worked during the Year ended 31st March, 1904.

Kind of Mineral.	Number of Workings.		Number of Persons Employed.	
	True Mines.	Underground Quarries.	True Mines.	Underground Quarries.
Anthracite ... ..	3	—	57	—
Asphalt ... ..	1	—	80	—
Brown coal ... ..	2	—	16	—
Brown coal and cement stone ...				

SWITZERLAND—continued.

NUMBER of WORKINGS and PERSONS EMPLOYED, classified according to MINERAL worked during the Year ended 31st March, 1904—continued.

Kind of Mineral.	Number of Workings.		Number of Persons Employed.	
	True Mines.	Underground Quarries.	True Mines.	Underground Quarries.
Gypsum ... ..	—	3	—	46
Iron ore ... ..	1	—	65	—
Lead ore, argentiferous ... ..	3	—	110	—
Limestone.. ... ..	—	16	—	232
Magnesia, sulphate of ... ..	1	—	6	—
Marble ... ..	—	1	—	10
Salt (rock salt) ... ..	1	—	28	—
Sandstone... ..	—	7	—	194
Slate ... ..	—	36	—	524
Total in 1904 ... ..	12	63	362	1,006
Total in preceding year ...	16	93	448	1,239

TABLE 514.

QUANTITY of MINERALS produced during the Years ended 31st March, 1902, 1903, and 1904.

Mineral.	Year.		
	1902.	1903.	1904.*
	Metric Tons.	Metric Tons.	Metric Tons.
Anthracite ... ..	*	*	*
Bituminous limestone ... ..	*	30,000	30,000
Brown coal ... ..	*	*	*
Cement (Portland) ... ..	175,065	*	*
„ (Roman) ... ..	17,190	*	*
Fireclay ... ..	*	*	*
Gypsum ... ..	49,807	*	*
Iron ore ... ..	*	*	*
Lime (hydraulic) ... ..	201,174	*	*
Magnesium sulphate ... ..	*	*	*
Marble ... ..	*	*	*
Marl ... ..	*	*	*
Potstone ... ..	*	*	*

\* Figures not available.



## SWITZERLAND—continued.

QUANTITY of MINERALS produced during the Years 1902, 1903, and 1904—continued.

Mineral.	Year.		
	1902.	1903.	1904.
	Metric Tons.	Metric Tons.	Metric Tons.
Pozzolana ... ..	16,400	*	*
Salt (Bex mine and brine wells) ... ..	50,990	*	*
Sandstone ... ..	*	*	*
Slate ... ..	*	*	*

\* Figures not available.

TABLE 515.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years ended 31st March, 1903 and 1904.

Kind of Workings.	1903.		1904.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines ... ..	2	4.46	1	2.76
Underground quarries ... ..	2	1.61	—	—

## Tong-King. (See INDO-CHINA.)

## Tunis.†

Tunis cannot be called an important mining country at the present time.

*Iron.*‡—There are large deposits of iron ore in the Regency, and it is considered that they deserve the attention of British ironmasters. Within recent years five important mines have been discovered in the north-west of Tunis. A railway has recently been made from Tunis to Kalâa-Es-Senam which runs close to some of the mines, and was expected to be open for traffic during the latter part of 1905.

*Phosphate of lime.*§—This mineral is found in the Lower Eocene rocks, especially to the north and south of the mountain chain running from Wady Stah, near Gafsa, to Tamerza; although at the present time the only active workings are those of Metlaoui, the beds may be followed for a distance of about 40 miles. The crude rock contains from 58 to 62 per cent. of phosphoric acid.

*Salt.*—This mineral is obtained from salt marshes and lakes. The total output of salt in 1904 was 23,600 metric tons, of which 11,485 were produced at salt pans worked by the State and 12,090 tons from Ras Dimas, Zouila, and Kniss salt lakes. The average value may be reckoned at about 2.98 francs per ton.

*Zinc ore.*—The lead and zinc mines of Tunis employed about 2,225 workmen in 1904, of whom 830 were Europeans, and the total value of their output was £164,560.

\* Figures not available.

† Information furnished by the French Government, and published in the *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1903, and pour l'année 1904.*‡ Consul-General Berkeley, "Trade of the Regency of Tunis." *Dipl. and Cons. Reports*, No. 2915, Ann. Ser. 1902, [Cd. 786-219], p. 20. *Ibid* for 1904, No. 3492, Ann. Ser. 1905 [Cd. 2582-17], pp. 6 and 7.§ *Etude des gisements de phosphates de Gafsa et du Chemin de fer de Sfax à Gafsa*, Paris, 1896.



TUNIS—continued.

TABLE 516.

QUANTITY and VALUE of MINERALS produced during the Years 1903 and 1904.\*

Mineral	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Fireclay ... ..	13,070	16,910	20,448	49,500
Flags ... ..	2,483	12,220	2,543	31,330
Lead ore ... ..	12,752	870,000	16,800	1,446,000
Lead and zinc ores mixed ... ..	3,056	112,000	2,900	89,000
Limestone ... ..	38,525	738,760	46,280	770,398
Paving stones ... ..	6,238	69,644	9,308	129,850
Phosphate of lime ... ..	352,088	6,529,206	455,197	8,197,748
Plaster and cement ... ..	9,334	333,887	13,564	190,988
Potter's clay ... ..	6,400	7,830	5,400	11,080
Salt from marshes and salt lakes ... ..	18,846	59,200	23,600	70,300
Sand, gravel, and flint ... ..	50,537	89,987	163,350	217,275
Stone (dressed for building) ... ..	445,068	7,307,530	293,093	505,158
„ (broken) ... ..	263,270	756,240	313,366	766,532
Zinc ore (calcined) ... ..	21,262	1,926,000	27,200	2,579,000
Total value in Francs ... ..	—	18,829,414	—	15,054,159
„ „ in £ sterling ... ..	—	£753,177	—	£602,166

Turkey.†

The mineral resources of the Ottoman Empire are great, but owing to deficient transportation facilities they are almost entirely undeveloped. No official statistics are published.

Alum.—A little alum is manufactured.

Antimony.—Several antimony mines are being worked; the Allkhar mines, near Rozdan, yielded 1,200 tons of 55 per cent. ore in 1892, and the shipments from mines near Aidin amounted to 1,322 tons in 1895. 267 tons, valued at £2,793 were exported from Salonica in 1900, and 481 tons valued at £7,171 from Smyrna in 1902 and 63 tons valued at £780 in 1903.‡

\* Return furnished by the French Government and published in the *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1903 and pour l'année 1904*.

† Dominian, "Mining in Turkey." *Eng. Min. Jour.*, Vol. LXXVIII., No. 5, pp. 184 and 185.

‡ Consular-Assistant Heard, "Trade of Salonica and District for the year 1902." *Dipl. and Cons. Reports*, No. 3100, Ann. Ser., 1903 [Cd. 1766-34]. Altintop, "Trade of Consular District of Smyrna for the Year 1904." *Dipl. and Cons. Reports*, No. 3467, Ann. Ser., 1905 [Cd. 2236-211] p. 18. Whitehead, "Mining Industries and Forestry in Turkey." *Dipl. and Cons. Reports*, No. 589, Ann. Ser., 1903 [Cd. 1387-2].

## TURKEY—continued.

**Arsenic.\***—Orpiment occurs with the antimony ore at Allkhar, near Rozdan, and about 500 tons are exported yearly; there are also some important mines near Yenikuey. Both orpiment and realgar are mined in Macedonia. 270 tons, valued at £4,320, were exported from Salonica in 1900 but only 50 tons in 1902. In 1904 the value of the arsenic exported from Baghdad was £29. The total output of the Turkish mines is about 2,000 tons annually.

**Asphalt.†**—Bitumen mines are worked at Selenitza, near Valona, and 4,700 tons of mineral valued at from £5 to £20 per ton were exported in 1904. The Dead Sea is reported to contain large quantities of asphalt and it is worked in small quantities in the vicinity of Hesbeya in Syria.

**Boracite.‡**—Borate of calcium, known in the trade as boracite and to mineralogists as pandermite, is worked near the port of Panderma in Asia Minor, and also found in the province of Aleppo. 6,000 tons of borax were exported from Panderma in 1904. The total annual output is about 9,000 tons.

**Chrome Ore.**—Chromite is found in many parts of Turkey, occurring in irregular bunches in serpentine. Daghardi mine exports from 12,000 to £15,000 tons yearly by the port of Déréndjé, in the Gulf of Ismidt. Three mines in the Merkenz-Sandjak of Broussa export 6,000 to 7,000 tons a year.§ The quantity exported from Smyrna was 2,030 tons, valued at £8,066 in 1903,§ and from Salonica 8,000 tons, valued at £7,000; from Kossova 3,100 tons, valued at £8,370†; from Derindjeh about 7,000 tons,|| and from Adana chrome ore valued at £500 in 1904.

**Coal.**—Although coal is known to occur in nearly all the provinces of the Empire, the only mines deserving mention at the present time are those at Eregli. The output of these collieries was about 300,000 tons in 1903.¶ Important deposits of lignite or brown coal exist in the region of the Lebanon, and near Lampsacus on the east side of the Dardanelles.

**Copper.**—Copper ores are worked in various places. The mines produce annually about 5,800 tons of crude copper. The Arghana Maden is the richest copper mine in Turkey; the average ore contains about 30 per cent. of copper. The value of the copper exported from Diarbekr was £36,220 in 1903, and £36,500 in 1904.\*\* The total output of fine copper in 1904 was about 950 tons.††

**Emery.**—This mineral was discovered in Asia Minor about fifty years ago; the quantity of emery shipped from Smyrna in 1903 was 14,291 tons, valued at £46,539.‡‡

**Fuller's earth** is quarried on a large scale. The deposits extend over 60 miles in length, and are of varying breadth. The greater part of their area is comprised in the Sandjak of Kutahia, and principally in the Caza of Eskichehir, between the two banks of the Poursaktchai and the left bank of the River Sakaria.§ 2,489 bags of Fuller's earth, valued at £480, were exported from Hodeida in 1904. §§

**Gold.**—A little alluvial gold is obtained in Thessaly and in some of the valleys of Macedonia. The river Pactolus, so famous in ancient times, no longer yields gold. In 1903 the total quantity of fine gold obtained was about 999 ozs. (kilos. 31).|||

\* Consular-Assistant Heard, "Trade of Salonica and District for the year 1902." *Dipl. and Cons. Reports*, No. 3100, Ann. Ser., 1903 [Cd. 1766-34]. Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1902-3." *Dipl. and Cons. Reports*, No. 3171, Ann. Ser., 1904 [Cd. 1766-104], p. 16. Whitehead, "Mining Industries and Forestry in Turkey." *Dipl. and Cons. Reports*, No. 589, Ann. Ser., 1903 [Cd. 1387-2]; and Consul-General Newmarch, "Trade of Baghdad for the year 1904." *Dipl. and Cons. Reports*, No. 3477, Ann. Ser., 1905 [Cd. 2682-2].

† Vice-Consul Du Vallon, "Trade of Consular District of Salonica for the year 1904." *Dipl. and Cons. Reports*, No. 3430, Ann. Ser., 1905 [Cd. 2236-174], and Consul Dickson, "Trade of Palestine for the year 1904." *Dipl. and Cons. Reports*, No. 3410, Ann. Ser., 1905 [Cd. 2236-154].

‡ Consul Waugh, "Trade of Constantinople and District for the year 1904." *Dipl. and Cons. Reports*, No. 3357, Ann. Ser., 1905 [Cd. 2236-101]; and Consul Barnham, "Trade of the Vilayets of Aleppo and Adana for the year 1903." *Dipl. and Cons. Reports*, No. 3154, Ann. Ser., 1904 [Cd. 1766-88].

§ Altintop, *op. cit.*

|| Waugh, *op. cit.*

¶ Consul Waugh, "Trade of Constantinople and District for the year 1903." *Dipl. and Cons. Reports*, No. 3140, Ann. Ser., 1904 [Cd. 1763-74], p. 16.

\*\* Consul Shipley, "Trade of Consular District of Erzeroum for the year 1904." *Dipl. and Cons. Reports*, No. 3442, Ann. Ser., 1905 [Cd. 2236-186].

†† H. R. Merton & Co., London.

‡‡ Consular-Assistant Du Vallon, "Trade of Salonica and District for the year 1903." *Dipl. and Cons. Reports*, No. 3250, Ann. Ser., 1904 [Cd. 1766-184]; and Consul-General Cumberbatch, "Trade of Smyrna and District for the years 1902-03." *Dipl. and Cons. Reports*, No. 3170, Ann. Ser., 1904 [Cd. 1766-104].

§§ Vice Consul Richardson, "Trade of Hodeida and Camaran for the years 1902-04." *Dipl. and Cons. Reports*, No. 3497, Ann. Ser., 1905 [Cd. 2682-22].

||| Annual Report of the Director of the United States Mint for the fiscal year ended 30th June, 1904, Washington 1904, p. 142.



TURKEY—continued.

*Iron.*—Large deposits of iron ore exist at Beirut-Dagh in the province of Aleppo, but are not worked.\*

*Iron Pyrites.*—The Cassandra Mining Company exported 11,000 tons of iron pyrites, valued at £6,000 from Stratonî in 1904.†

*Manganese.*—There are manganese mines in Macedonia and in Asia Minor, 2,500 tons of ore were exported from Salonica and 39,000 tons from Stratonî in 1904.†

*Marble.*—Beautiful mottled marble is now being quarried in the Island of Scio.‡

*Meerschaum.*—Mining meerschaum is an industry of some importance at Sari-sou, Sépétjdji, Gheikli and Menlou, and several thousand persons are employed in digging the stone and preparing it for the market.\*

*Petroleum.*—Oil is obtained from wells at Myriofito and Hora on the north coast of the Sea of Marmora.\*

*Salt.*—This is a Government monopoly; the mineral is obtained from sea water, brine lakes or springs, and rock salt mines. Extensive beds of salt are located in the region of the Dead Sea in Palestine.§ The rock salt mines are worked near Van in Armenia. 203,128 || tons of salt were produced in the year 1893-4. The tax on salt collected in the Trebizond District in 1903 amounted to about £91,000.¶ Rock salt is also widely distributed over many parts of Tehama. In 1904 the output of rock salt from the Salif Salt Works amounted approximately to 70,000 tons.\*\* 3,013 tons, valued at £9,910 were exported from Smyrna in 1903, and 625 tons from Muskat in 1904-5.††

*Silver-lead.*—Deposits of argentiferous galena are worked at Balia, in the Sandjak of Karassi, and at Avnie, in the Caza of Adramit. The Kodja Gumush mine at Balia produces annually from 4,000 to 6,000 tons of ore, yielding 82 per cent. of lead and from 1¼ to 4 per cent. of silver.\* The output of fine silver for Turkey in 1903 is stated‡‡ to have been 458,830 ozs. (Kilos. 14,274).

*Zinc Ore.*—Calamine deposits are worked by a French company in the Island of Scio.‡ In 1901 the quantity of zinc exported from Trizibond was 1,700 tons.§§

United States.||||

The United States are the greatest producers of coal, iron, and copper in the world.

*Coal.*—The total production of coal in 1904 was 319,613,923 metric tons, of which 66,367,331 metric tons were anthracite and 253,246,592 true bituminous coal. More than one-half of the mineral fuel raised in the United States is produced by Pennsylvania. The anthracite comes almost entirely from Pennsylvania; Colorado and New Mexico yield very small quantities.

In the case of anthracite there is a decrease of 1,315,758 metric tons, and in bituminous coal a decrease of 3,261,934 metric tons; taking anthracite and bituminous coal together, there is a net decrease of more than 4½ million metric tons.

\* Vice-Consul Waugh, "Trade of Constantinople and District for the year 1901." *Dipl. and Cons. Reports*, No. 2813, Ann. Ser., 1902 [Cd. 786-117], and Consul Barnham, "Trade of the Vilayets of Aleppo and Adana for the year 1903." *Dipl. and Cons. Reports*, No. 3154, Ann. Ser., 1904 [Cd. 1766-88].

† Consular-Assistant Du Vallon, "Trade of Salonica and District for the year 1904." *Dipl. and Cons. Reports*, No. 3430, Ann. Ser., 1905 [Cd. 2236-174].

‡ Consul-General Cumberbatch, "Trade of Smyrna and District for the years 1897-99." *Dipl. and Cons. Reports*, No. 2462, Ann. Ser., 1900 [Cd. 1-99].

§ Dickson, *op. cit.*

|| *Oest. Zeitsch. f. B. u. Huttenwesen*, Vol. XLIV., 1897, p. 223.

¶ Consul Longworth, "Trade of Vilayet of Trebizond for the year 1903." *Dipl. and Cons. Reports*, No. 3160, Ann. Ser. 1904 [Cd. 1766-94].

\*\* Consul Devey, "Trade of Jeddah and Hodeidah for the year 1897." *Dipl. and Cons. Reports*, No. 2203, Ann. Ser., 1899 [C. 9014-29], and Vice-Consul Richardson, *op. cit.*

†† Altintop, *op. cit.*, and Consul Grey, "Trade of Muscat for the year 1904-05." *Dipl. and Cons. Reports*.

‡‡ Annual Report of the Director of the United States Mint for the fiscal year ended 30th June, 1903, Washington, 1903 p. 145.

§§ Whitehead, "Mining Industries and Forestry in Turkey." *Dipl. and Cons. Reports*, No. 589, Ann. Ser., 1903 [Cd. 1387-2].

|||| Official information furnished by the United States Geological Survey, Washington. Many useful statistics relating to the United States, and much valuable information concerning mines and minerals all over the world are contained in the volumes entitled *The Mineral Resources of the United States*, published by the Department of the Interior, Washington; and also in *The Mineral Industry: Its Statistics, Technology and Trade*, published by the Proprietors of the Engineering and Mining Journal, New York and London.



UNITED STATES—*continued.*

Great progress has been made in the use of coal-cutting machinery since 1899 ; in that year the number of machines in use was 3,125 as compared with 7,671 in 1904. According to Table 517, supplied by the United States Geological Survey, the amount of bituminous coal mined by machines in 1904 was more than 78½ million short tons, or about 71 million metric tons. The output of machine-mined coal in 1904 was 22·34 per cent. of the total.

TABLE 517.

BITUMINOUS COAL MINED by MACHINES in the UNITED STATES during the Years 1900–1904.

States.	Year.				
	1900.	1901.	1902.	1903.	1904.
	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).
Alabama ... ..	—	—	—	577,317	741,170
Colorado ... ..	756,025	319,678	857,279	1,270,221	945,965
Illinois ... ..	5,083,594	5,774,639	7,112,039	7,381,027	7,110,902
Indiana ... ..	1,774,045	1,852,058	2,421,342	3,334,961	3,681,032
Kentucky ... ..	2,339,944	2,254,711	3,091,626	2,843,805	3,595,513
Montana ... ..	1,045,115	748,981	691,669	693,504	482,924
Ohio ... ..	8,835,743	9,908,316	12,094,641	14,007,326	14,001,647
Pennsylvania ... ..	26,867,053	29,591,368	35,058,038	37,146,253	35,174,613
West Virginia ... ..	3,418,377	4,817,943	5,738,045	8,193,840	9,526,749
Wyoming ... ..	653,314	804,826	588,302	783,822	1,053,702
Other States producing less than half a million tons each annually.	2,011,313	1,770,815	1,958,601	1,742,818	2,378,280
Total ... ..	52,784,523	57,843,335	69,611,582	77,974,894	78,692,497

The kinds of machines employed are set forth in the following table.

TABLE 518.

COAL-CUTTING MACHINES employed in the UNITED STATES in the Year 1904, arranged according to their mode of action.

State.	Chain Machines.	Percussive Machines.	Long Wall Machines.	Total.
Alabama ... ..	22	119	—	141
Arkansas ... ..	—	—	—	—
Colorado ... ..	56	67	2	125
Illinois ... ..	102	541	—	643
Indiana ... ..	269	139	1	409
Indian Territory ... ..	10	8	—	18
Iowa ... ..	10	11	18	39
Kansas ... ..	—	3	2	5



UNITED STATES—*continued.*TABLE 518—*continued.*

COAL-CUTTING MACHINES employed in the UNITED STATES in the year 1904, arranged according to their mode of action—*continued.*

State.	Chain Machines.	Percussive Machines.	Long Wall Machines.	Total.
Kentucky ... ..	112	336	5	453
Maryland ... ..	—	38	—	38
Michigan ... ..	1	84	—	85
Missouri ... ..	1	—	30	31
Montana ... ..	1	56	—	57
New Mexico... ..	10	2	—	12
North Dakota ... ..	8	1	—	9
Ohio ... ..	779	88	—	867
Pennsylvania ... ..	1,175	2,455	15	3,645
Tennessee ... ..	14	71	—	85
Texas... ..	—	6	3	9
Utah ... ..	—	7	2	9
Virginia ... ..	15	3	—	18
West Virginia ... ..	491	410	—	901
Wyoming ... ..	26	46	—	72
Total ... ..	3,102	4,491	78	7,671

*Copper.*—There are three great copper States : Montana, Michigan, and Arizona ; the first furnished in 1904 about 36·7, the second 25·6, and the third 23·6 per cent. of the total output of the whole country, which was 368,564 metric tons of metal, equal to more than half of the world's production.

*Gold.*—The principal gold-producing States are Colorado with a yield in 1904 of 1,183,518 ozs., California 901,484 ozs., and South Dakota 356,264 ozs. The output of Alaska Territory was 443,177 ozs.

*Igneous rocks.*—The value of granite, &c., quarried in 1904 amounted to \$19,992,983. The principal producing States are California, Connecticut, Maine, Massachusetts, New Hampshire, and Vermont.

*Iron.*—More than five-sevenths of the iron is obtained from the States of Minnesota and Michigan ; the former produced nearly 13 million metric tons of ore in 1904, and the latter more than 7 million tons. The total output of ore from the United States was 28 million metric tons, a decrease of 7½ million tons compared with 1903 : about 86·2 per cent. of the ore is red hematite.

*Lead.*—Idaho was again the greatest producer in 1904, followed by Utah and Colorado ; the total production of 278,509 metric tons exceeded that of the previous year by 24,495 tons.

*Marble.*—The value of the total output of marble in 1904 amounted to \$6,297,835 ; of this amount Vermont contributed \$4,004,669, or nearly two-thirds.

*Mineral Waters.*—The output of all the mineral springs in the United States amounted to 67,718,500 gallons, valued at \$10,398,450, which is an increase of over 16¼ million gallons in quantity and an increase of more than 1¼ million dollars in value compared with 1903. The leading States in 1903 were Michigan and Massachusetts. Next comes Kansas, and then Virginia, Minnesota, New York, and Pennsylvania.

*Natural Gas.*—At the close of the year 1904 there were 16,138 boreholes producing natural gas. The output of the year was approximately 256,645 million cubic feet, valued at \$38,496,760, or more than 7½ millions sterling.



## UNITED STATES—continued.

*Petroleum.*—The yield of the oil-wells of the United States almost equals that of all the rest of the world put together. In 1904 the production was 117,063,421 barrels of 42 gallons, or  $16\frac{1}{2}$  million barrels more than the previous year.

The principal oil-producing States are California, Ohio, Texas, West Virginia, Pennsylvania, Indiana, Kansas, Louisiana, Indian Territory and Oklahoma.

*Phosphate of Lime.*—The three great phosphate States are Florida, South Carolina, and Tennessee, with a production in 1904 of 1,072,951, 270,806 and 530,571 tons respectively.

*Quicksilver.*—This mineral is obtained in California, Texas and Nevada. The first-named State produced in 1904 about six-sevenths of the total output, and Texas about one-seventh.

*Salt.*—Previous to 1893 Michigan was the chief salt-producing State; in that year New York assumed the lead and maintained it until 1901, Michigan then resumed the supremacy, but was again surpassed in 1902 by New York with a production of 8,523,389 barrels against 8,131,781 obtained by Michigan. In 1904 the total production of the whole country amounted to 22,030,002 barrels, of which New York contributed 8,600,656 barrels.

*Silver.*—The silver yield for 1904 amounted to 55,999,864 ozs., or 1,699,864 ozs. more than in the previous year. The production of Idaho increased by 1,158,982 ozs., Colorado by 957,435 ozs., Utah by 852,646 ozs., and California by 549,089 ozs., but that of Arizona fell off by 1,072,160 ozs., and Nevada by 782,377 ozs.

*Zinc.*—The production of zinc in the United States in 1904 was 169,375 metric tons, which is the highest quantity hitherto recorded; Colorado, Kansas, Illinois, Missouri, and New Jersey were the principal producing States.

It is beyond the province of this Report to enter into minute details concerning each individual State; but a few facts relating to those in which mining is one of the important industries may with propriety be inserted from time to time.

## PENNSYLVANIA.\*

The most important mining State is Pennsylvania, which produced 99,600,167 short tons (90,356,679 metric) of bituminous coal in 1904, as against 103,713,982 (94,088,707 metric) in 1903, and 73,594,369 short tons (66,764,374 metric) of anthracite, as against 75,232,585 (68,250,553 metric). The total decrease in the output for the year was 5,752,031 short tons (5,218,207 metric).

The number of persons employed in and about mines of bituminous coal in 1904 was 155,747, and in and about anthracite mines 161,330.

The death-rate per 1,000 persons employed in and about bituminous mines was 3.44, and in and about anthracite 3.69; and the death-rate from accidents underground per 1,000 persons employed underground in all coal mines was 4.20: 42 per cent. of the total deaths at bituminous and anthracite mines in 1904 were due to falls of ground as against 50 per cent. in 1903.

## ILLINOIS.†

This State comes second among the coal-producing States, though a very long way behind Pennsylvania. The output of Illinois for the year ending 30th June 1904 was 37,077,897 short tons (33,636,848 metric) or an increase of over 2 million short tons (2 million metric) compared with 1903.

The death-rate from accidents in 1903-4 was 2.87 per 1,000 persons employed: more than 41 per cent. of the deaths were caused by falls of ground. The average death-rate for the 22 years, 1883-1904, is 2.26, whilst the output in 1904 was more than three times that of 1883.

The amount of coal cut by machinery during the year 1903-04 was 7,400,343 short tons, and 609 machines were employed.

\* Report of the Bureau of Mines of the Department of Internal Affairs of Pennsylvania, 1904, Harrisburg, 1905.

† Twenty-third Annual Coal Report for the year ending 30th June, 1904, prepared by the Illinois Bureau of Labor Statistics, Springfield, Ill., 1905.



UNITED STATES—continued.

TABLE 519.

PERSONS EMPLOYED at COAL MINES in the various STATES during the Years 1903 and 1904.\*

State.	1903.		1904.	
	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.
Alabama ... ..	21,438	544	17,811	632
Arkansas... ..	4,157	536	4,580	439
California ... ..	208†	507	168†	470
Colorado... ..	9,229	804	8,123	820
Georgia ... ..	681	612	906‡	431
Idaho ... ..	32	133	32§	104
Illinois ... ..	50,596	731	54,685	667
Indiana ... ..	17,017	634	19,707	555
Indian Territory ... ..	7,704	457	8,487	360
Iowa ... ..	14,162	453	15,629	417
Kansas ... ..	10,924	535	12,198	519
Kentucky ... ..	14,354	525	14,200	533
Maryland ... ..	5,859	827	5,671	849
Michigan ... ..	2,768	494	3,549	378
Missouri ... ..	9,544	444	10,137	411
Montana... ..	2,155	691	2,505	543
New Mexico ... ..	1,789	862	1,849	786
North Carolina ... ..	49	354	—	—
North Dakota ... ..	486	594	547	487
Ohio ... ..	41,936	593	43,691	559
Oregon ... ..	235	388	734	152
Pennsylvania { Anthracite	150,483	495	155,861	469
{ Bituminous	129,265	798	135,125	725
Tennessee ... ..	9,961	482	10,416	459
Texas ... ..	2,380	389	2,921	409
Utah ... ..	1,925	874	1,374	1,087
Virginia ... ..	5,608	615	5,430	660
Washington ... ..	4,768	670	5,287	594
West Virginia ... ..	41,554	706	47,485	687
Wyoming ... ..	4,993	928	5,660	915
Total for United States ...	566,260	631	594,768	592

\* Official Return furnished by the United States Geological Survey, Washington.  
† Includes Alaska.  
‡ Includes North Carolina.  
§ Includes Nevada.

## UNITED STATES—continued.

TABLE 520.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES, 1903 and 1904.\*

Product.	Customary Measures.	1903.			1904.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
Non-Metallic.							
Arsenious oxide .. .. .	Short tons ..	611	554	\$ 36,606	36	33	\$ 2,185
Asbestos .. .. .	" ..	887	806	16,760	1,480	1,343	25,710
Asphaltum .. .. .	" ..	101,225	91,831	1,005,446	81,572	74,002	902,741
Barytes .. .. .	" ..	50,367	45,720	152,150	65,727	59,627	174,938
Bauxite .. .. .	Long tons ..	48,087	43,859	171,308	47,661	43,426	235,704
Borax .. .. .	Short tons ..	—	—	—	—	—	—
Borax .. .. .	{ refined crude	34,430	31,235	661,400	45,647	41,411	668,810
Bromine .. .. .	Pounds ..	598,500	271	107,580	897,100	407	269,130
Building stone .. .. .	—	—	—	67,960,468	—	—	74,300,361
Cement .. .. .	Bls.‡ ..	29,899,140	5,082,118	31,931,341	31,675,257	5,512,640	26,031,920
Chromic iron ore .. .. .	Long tons ..	150	152	2,250	123	125	1,845
Clay (brick) .. .. .	—	—	—	15,000,000	—	—	13,000,000
" (all other than brick) ..	Short tons ..	1,650,835	1,497,628	2,649,642	1,503,752	1,368,791	2,220,162
Coal, anthracite§ .. .. .	Long tons ..	66,613,454	67,683,089	152,036,448	65,318,490	66,367,331	138,674,020
" bituminous .. .. .	Short tons ..	282,749,348	256,508,526	351,637,933	279,153,718	253,243,592	306,842,268
Cobalt oxide .. .. .	Pounds ..	120,000	54	228,000	22,000	10	42,600
Corundum and emery .. ..	Short tons ..	2,542	2,306	64,102	1,932	1,753	57,235
Feldspar .. .. .	" ..	41,891	38,003	256,733	45,168	40,994	266,326
Fibrous talc .. .. .	" ..	60,230	54,640	421,606	64,005	58,065	507,400
Flint .. .. .	" ..	55,233	50,107	156,947	52,270	47,419	100,590
Fluorspar .. .. .	" ..	42,523	38,577	213,617	30,452	33,069	234,755
Fuller's earth .. .. .	" ..	20,693	18,773	190,277	29,480	26,744	168,500
Garnet (abrasive) .. .. .	" ..	3,950	3,583	132,500	3,854	3,496	117,581
Graphite .. .. .	{ Crystalline Pounds ..	4,538,155	2,058	325,554	5,681,177	2,577	341,372
Graphite .. .. .	{ Amorphous Short tons ..	16,591	15,051	721,446	18,115	17,341	881,527
Grindstones .. .. .	—	—	—	—	—	—	—
Gypsum .. .. .	Short tons ..	1,041,704	945,028	3,792,943	940,917	853,594	2,784,325
Lithium .. .. .	" ..	1,155	1,048	23,425	577	523	5,155
Infusorial earth and Tripoli ..	" ..	9,219	8,363	70,373	6,274	5,692	44,104
Limestones for iron flux .. ..	Long tons ..	12,029,719	12,222,884	5,423,732	—	—	—
Magnesite .. .. .	Short tons ..	3,744	3,397	10,595	2,850	2,583	9,298
Manganese ore .. .. .	Long tons ..	2,825	2,670	25,335	3,146	3,197	29,466
Marls .. .. .	Short tons ..	34,211	31,036	22,521	18,989	17,227	13,145
Mica .. .. .	{ Sheet Pounds ..	90,100	41	17,128	668,358	303	106,462
Mica .. .. .	{ Scrap Short tons ..	1,693	1,536	41,900	1,096	994	10,854
Millstones .. .. .	—	—	—	52,552	—	—	37,338
Mineral waters .. .. .	{ Gallons sold ..	51,242,757	—	9,041,078	67,718,500	—	10,398,450
Mineral waters .. .. .	{ Litres ..	232,819,314	—	—	307,676,161	—	—
Monazite .. .. .	Pounds ..	862,000	391	64,630	743,999††	338	85,038††
Natural gas .. .. .	—	—	—	35,815,200	—	—	38,496,760
Oilstones .. .. .	—	—	—	396,357	—	—	188,985
Paints, mineral .. .. .	Short tons ..	62,122	56,357	646,222	59,785	54,237	631,171
Petroleum .. .. .	{ Bls., 42 gals. ..	100,461,337	—	—	117,963,421	—	101,170,466
Petroleum .. .. .	{ Litres ..	19,170,558,342	—	—	22,338,854,939	—	—
Phosphate rock .. .. .	Long tons ..	1,581,576	1,066,972	5,319,294	1,874,428	1,904,526	6,873,625
Precious stones .. .. .	—	—	—	321,400	—	—	321,306
Pumice .. .. .	Short tons ..	885	803	2,665	1,530	1,388	5,421
Pyrites .. .. .	Long tons ..	233,127	236,870	1,109,818	333,542	338,898	3,400,863
Quartz (Crystalline) .. .. .	Short tons ..	8,938	8,109	76,908	31,924	28,961	74,800
Rutile .. .. .	Pounds ..	—	—	—	—	—	—
Sand, Glass .. .. .	Short tons ..	823,044	746,661	865,828	838,719	779,025	796,492
Sand Moulding Building, &c. ..	—	—	—	—	—	—	4,551,607
Salt .. .. .	Bls., 280 lbs. ..	18,988,089	2,409,083	5,288,988	22,030,002	2,797,968	6,021,223
Soapstone .. .. .	Short tons ..	26,871	24,196	418,460	27,184	24,661	433,331
Sulphur .. .. .	" ..	—	—	—	—	—	—
Uranium and Vanadium .. .. .	" ..	19	17	5,825	45	41	10,600
Zinc, white .. .. .	" ..	62,962	57,119	4,801,718	63,363	57,483	4,808,482
Zircon .. .. .	Pounds ..	3,000	1	570	—	—	—
Total value of non-metals in \$ ..	.. ..	—	—	794,403,561	—	—	747,180,350
Total value of non-metals in £ sterling. ..	.. ..	—	—	£163,121,331	—	—	£153,125,123

\* Official Return furnished by the United States Geological Survey, Washington.

† The United States Geological Survey Department calculates on the basis of 2,204.6 lbs. = 1 metric ton.

‡ Barrels of 300 lbs. for natural rock cement, and of 400 lbs. for artificial Portland cement. The output of Cement in 1904 was 26,505,881 barrels.

§ Represents production from Pennsylvania only. || Included under unspecified products.

\*\* Included under the heading of "Building stone."

†† Including Zircon.

UNITED STATES—continued.

TABLE 520—continued.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES, 1903 and 1904—continued.

Product.	Customary Measures.	1903.			1904.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
<i>Metallic.</i>							
Aluminium .. .. .	Pounds .. ..	7,500,000	3,402	2,284,900	8,600,000	3,901	2,477,000
Antimony .. .. .	Short tons ..	3,128	2,838	548,433	3,067	2,773	508,534
Copper .. .. .	Pounds .. ..	688,044,517	316,631	91,508,006	812,537,367	368,564	106,639,945
Gold (fine) .. .. .	Troy ounces ..	3,580,000	—	73,591,700	3,910,729	—	90,835,648
	Kilos. .. ..	110,729			121,637		
Iron, pig .. .. .	Long tons ..	18,009,252	18,298,432	344,350,000	16,497,033	16,761,981	233,025,000
Lead .. .. .	Short tons ..	280,000	254,014	23,520,000	307,000	278,509	26,402,000
Nickel .. .. .	Pounds .. ..	114,200	52	45,900	24,000	11	11,400
Platinum .. .. .	Troy ounces ..	110	—	2,080	200	—	4,160
	Kilos. .. ..	3			6		
Quicksilver .. .. .	Flasks 76½ lbs. ..	35,620	1,236	1,544,934	34,570½	1,188	1,508,795
Silver (fine) .. .. .	Troy ounces ..	54,300,000	—	70,206,060	55,999,864	—	72,402,224
	Kilos. .. ..	1,688,920			1,741,792		
Zinc .. .. .	Short tons ..	159,219	141,443	16,717,995	186,702	169,375	18,670,300
Total value of metals in \$ .. .. .	.. .. .	—	—	624,318,008	—	—	541,466,793
" " " £ sterling .. .. .	.. .. .	—	—	£128,196,716	—	—	£111,184,147
Estimated value of products unspecified. .. .. .	.. .. .	—	—	\$1,000,000	—	—	\$400,000
Total value in \$ .. .. .	.. .. .	—	—	1,419,721,569	—	—	1,289,047,146
" " £ sterling.. .. .	.. .. .	—	—	£291,523,936	—	—	£264,691,408

The following tables give further details concerning the output of coal and iron ore:—

TABLE 521.

COMPARATIVE OUTPUT of COAL for the Years ending December 31st, 1903 and 1904, in the principal COAL-PRODUCING STATES.†

State.				1903.	1904.	Comparison with preceding Year.
				Metric Tons.	Metric Tons.	Metric Tons.
Illinois .. .. .	...	...	...	33,527,265	33,089,957	— 437,308
Ohio .. .. .	...	...	...	22,532,979	22,167,116	— 365,863
Pennsylvania†	Anthracite ..	...	...	68,250,553	66,764,374	— 1,486,179
	Bituminous ..	...	...	94,088,707	90,356,679	— 3,732,028
West Virginia .. .. .	...	...	...	26,614,570	29,577,083	+ 2,962,513

\* Flasks of 76½ lbs. up to 1st June, 1904, and of 75 lbs. since that date.  
† Information furnished by the United States Geological Survey, Washington.  
‡ Report of the Bureau of Mines of the Department of Internal Affairs of Pennsylvania, 1904 Harrisburg, 1905.



## UNITED STATES—continued.

TABLE 522.

## PRODUCTION of IRON ORES.\*

State.	Red Hematite.	Brown Hematite.	Magnetite.	Carbonate.	Total.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.
Minnesota ...	12,933,226	—	—	—	12,933,226
Michigan ...	7,203,732	—	—	—	7,203,732
Alabama ...	2,940,900	800,159	18,232	—	3,759,291
Other States ...	1,144,418	1,381,107	1,646,929	19,520	4,191,974
Total for 1904 ...	24,222,276	2,181,266	1,665,161	19,520	28,088,223
„ 1903 ...	30,815,651	3,129,862	1,600,719	35,392	35,581,624

TABLE 523.

## DEATHS from ACCIDENTS at COAL MINES in the various STATES, during the Years 1903 and 1904.†

State.	1903.			1904.		
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.
Alabama ...	57	2.94	186,225	84	4.71	121,749
Arkansas ...	—	—	—	—	—	—
California ...	Nil.	—	—	Nil.	—	—
Colorado ...	40	3.89	176,343	89	10.96	69,075
Georgia ...	†	—	—	†	—	—
Illinois§ ...	156	3.13	203,278	157	2.87	214,247
Indiana ...	55	3.23	178,052	34	1.91	263,417
Indian Territory ...	40	6.57	73,566	30	3.63	93,617
Iowa ...	27	2.05	207,839	25	1.42	246,975
Kansas ...	26	3.30	147,166	31	3.00	155,929
Kentucky ...	27	2.00	241,860	20	1.46	322,444

\* Return furnished by the United States Geological Survey, Washington.

† Compiled from the Reports of Inspectors of Mines for the various States, and *Eng. Min. Jour.*, Vol. LXXX., No. 22, 1905, p. 1014.

‡ No report.

§ For Fiscal Years ended June 1903 and 1904.

|| Revised figures.

UNITED STATES—*continued.*DEATHS FROM ACCIDENTS AT COAL MINES in the various STATES, during the Years 1903 and 1904—*continued.*

State.				1903.			1904.		
				Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.
Maryland ...	...	...	...	13*	2.29 *	338,186*	10	1.67	434,588
Michigan ...	...	...	...	†	—	—	†	—	—
Missouri ...	...	...	...	17	1.85	227,616	11	1.09	339,430
Montana ...	...	...	...	5	2.32	270,128	9	3.60	156,570
New Mexico ...	...	...	...	16*	8.60	82,781	17	8.58	87,413
North Carolina ...	...	...	...	†	—	—	†	—	—
North Dakota ...	...	...	...	†	—	—	†	—	—
Ohio ...	...	...	...	114	2.75	195,550	118	2.57	189,002
Pennsylvania {	Anthracite ...	...	...	518	3.41	131,758	595	3.69	112,209
	Bituminous ...	...	...	402	2.65	234,052	536	3.44	168,576
Tennessee ...	...	...	...	26	2.61	167,412	28	2.81	157,050
Texas ...	...	...	...	†	—	—	†	—	—
Utah ...	...	...	...	7	3.64	217,909	9	4.06	157,577
Virginia ...	...	...	...	†	—	—	22	5.10	105,451
Washington ...	...	...	...	25	5.13	115,775	31	6.69	85,033
West Virginia†	...	...	...	159	4.03	146,425	140	8.33	195,843
Wyoming ...	...	...	...	†	—	—	†	—	—
Total and average for States for which figures have been received.				1,740§*	3.11*	176,542*	1,996§	3.35	154,281

It will be seen by the above table (523) that there were 234 more deaths in 1904 than in the previous year. This increase is mainly accounted for by two serious disasters which occurred in coal mines in Pennsylvania and Colorado during the year.

The first accident, by which 177 persons lost their lives, happened on the 25th January, 1904, at Harwick Mine, Co. Allegheny, and was the result of an explosion caused by a blown out shot igniting gas and coal dust.

The second accident was caused by an explosion of firedamp at a mine at Tercio, 40 miles west of Trinidad, Colorado, and involved the loss of 60 lives.

Complete statistics concerning the fatalities at ore mines are lacking.

There were 33 deaths from accidents,|| equivalent to 2.42 per 1,000 persons employed, at the Lake Superior copper mines during the year ended 30th September, 1903.

\* Revised figures.

† No report.

‡ For Fiscal Year ended June 1903 and 1904

§ Excluding Arkansas, Georgia, Michigan, North Carolina, North Dakota, Texas, and Wyoming.

|| *Annual Report of the Inspector of Mines for Year ending 30th September 1903, Houghton, 1903.*



## UNITED STATES—continued.

The death-rates per 1,000 persons employed underground at the metalliferous mines of Colorado\* during the seven years 1896 to 1902 have been as follows:—5·966, 5·876, 5·458, 3·743, 3·823, 4·919, and 3·274. All these mortality rates are high.

In the metalliferous mines of Montana† there were 47 persons killed in 1902, and 41 in 1903, and the death-rates were 3·41 and 2·81 per 1,000 persons employed respectively.

In the lead and zinc mines of the State of Missouri‡ 21 fatalities happened in the year 1903 and 30 in 1904, and the death-rates were 1·69 and 2·44 per 1,000 persons employed.

### United States Possessions.—(See CUBA, PHILIPPINE ISLANDS, AND PORTO RICO.)

### Uruguay.

The number of persons employed at mines and quarries in the Republic of Uruguay is unknown. Auriferous quartz appears to be the principal mineral worked; the quantity of gold obtained in 1903 was only 117 kilos, so that the number employed in mining cannot be large.

TABLE 524.

QUANTITY and VALUE of GOLD produced in 1902 and 1903.§

Mineral.	1902.		1903.	
	Quantity.	Value.	Quantity.	Value.
Gold ... ..	Kilos. 131	£ 12,295	Kilos. 117	£ 10,956

### Venezuela.¶

According to official statements the country abounds in asphalt, coal, petroleum, salt, and sulphur, as well as in the ores of copper, gold, iron, lead, silver, and tin; but these rich mineral resources are almost entirely neglected.

*Asphalt.*—The quantity exported from Maracaibo in 1904 was 13,519 metric tons, valued at £54,076.

*Gold.*—The gold mining industry does not make much progress. The precious metal is obtained mainly from quartz veins in the Caratal or Yuruari district.

*Iron.*—The deposits of iron ore at Imataca, on the Lower Orinoco, are not yet being worked. Haematite containing 65 per cent. of iron has been discovered in large quantities at Manoa, near the river Amacuro.

\* Report of the State Bureau of Mines for the Years 1901-2. Denver, 1903, p. 250.

† Fourteenth Annual Report of the Inspector of Mines of the State of Montana for the years 1901 and 1902, Helena, 1903, and information furnished by the State Coal Mine Inspector.

‡ Sixteenth Annual Report of the State Lead and Zinc Mine Inspector of the State of Missouri for the year ending 31st December, 1903, Jefferson City, 1904, and information furnished by the State Mine Inspector.

§ Return furnished by the "Dirección General de Estadística. Sección Industrial y de Minas," Montevideo.

|| Fine Gold 70%, Fine Silver 30%.

¶ Information furnished by the Director of Statistics, Caracas. Acting Consul Andral, "Trade of Caracas for the Year 1904." Dipl. and Cons. Reports, No. 3,384, Ann. Ser. 1905 [Cd. 2236-128]; Consul de Lemos "Trade of Ciudad Bolívar for the Year 1901." Dipl. and Cons. Reports, No. 2,772, Ann. Ser., 1902 [Cd. 786-76]; Mineral Resources of the United States for 1903, published by the United States Geological Survey, Washington, 1904; Annual Report of the Director of the United States Mint for the Fiscal year ended 30th June, 1903 Washington, 1903; and The Mineral Industry for 1903, Vol. XII., New York, 1904.



VENEZUELA—continued.

*Salt* is a Government monopoly ; the quantity obtained in 1902 was 10,153 metric tons, valued at 2,842,860 bolivares (£112,589), and in the year ending June, 1904, 7410 metric tons, valued at 741,087 bolivares (£29,350).

*Sulphur*.—A small quantity of sulphur (17 tons, valued at £40) was shipped from a mine at Carupano in 1903–4.

TABLE 525.

QUANTITY and VALUE of MINERALS produced during the years ending June 1903 and 1904.

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Asphalt ... ..	14,567*	58,871	13,519*	54,076
Gold (fine) ... ..	Kilos. 451	61,602	Kilos. 262†	30,708
Salt ... ..	(Not stated.)	—	7,410	29,350
Sulphur ... ..	340	525	17	40

\* Quantity exported.  
† Quantity exported during half-year ending 31st December, 1904.

## INDEX.

		Page.
<b>A.</b>		
ABERDEEN, Clay ... ..	168, 184	
" Gravel and sand ... ..	168, 220	
" Igneous rocks ... ..	168, 223	
" Sandstone ... ..	169, 275	
" Persons employed ... ..	66, 169	
Abyssinia, Mineral Output ... ..	309, 375	
Accidents, Fatal, at Mines in the United Kingdom	7, 9, 67-100, 310, 311, 315	
" " Mines under the Coal Mines Act ... ..	7, 9, 22, 23, 42	
" " Mines under the Metalliferous Mines Act ... ..	7, 9, 24, 25, 43	
" " Quarries under the Quarries Act ... ..	7, 9, 26, 27, 100-110	
" " in the several Coal-fields ... ..	95-99	
" " at Coal Mines ... ..	72	
" " Boiler explosions ... ..	22, 23, 93, 94	
" " Descent or ascent ... ..	22-25, 83	
" " Explosions of Fire-damp or Coal-dust ... ..	22, 23, 35, 42, 43, 73-78	
" " Explosives ... ..	22-25, 85-88	
" " Falls of ground ... ..	22-25, 35, 42, 43, 73, 78-82	
" " Haulage ... ..	22-25, 35, 85, 90, 91	
" " in the several Inspection districts ... ..	22 25	
" " at Iron Mines ... ..	72	
" " Irruptions of water ... ..	22, 23, 85, 88-90	
" " Miscellaneous underground ... ..	22-25, 35, 42, 43, 73, 84-92	
" " " on surface ... ..	22-25, 93, 95	
" " Machinery ... ..	22-25, 85, 91, 93, 94	
" " at "other Mines" than Coal and Iron ... ..	72	
" " Railways, sidings, &c. ... ..	22-25, 93, 95	
" " Ropes and chains breaking ... ..	22, 23, 83-85	
" " Shafts ... ..	22-25, 35, 42, 43, 73, 82-84	
" " Suffocation by natural gases ... ..	22, 23, 85, 88	
" " Surface ... ..	22-25, 35, 42, 43, 73, 92-95	
" " Trams and tubs ... ..	22-25, 85, 90, 91	
" " Underground fires ... ..	22, 23, 75, 85, 88	
" " Aldwarke Main Colliery ... ..	83	
" " Bower Colliery ... ..	92	
" " Calder Colliery ... ..	76	
" " Dean and Chapter Colliery ... ..	91	
" " Easington Colliery ... ..	88, 89	
" " Eldon Colliery ... ..	91	
" " Exhall Colliery ... ..	92	
" " Great Laxey Mine ... ..	92	
" " Herbertshire, No. 3 Pit ... ..	91	
" " Lidgett Colliery ... ..	92	
" " Lunt's Colliery ... ..	83	
" " Lynch Colliery ... ..	89	
" " Melgund Colliery ... ..	88	
" " National Colliery ... ..	74	
" " Pilsley Colliery ... ..	95	
" " St. Helen's Colliery ... ..	76	
" " St. John's Colliery ... ..	76	
" " Shelton Colliery, Deep Pit ... ..	92	
" " Sneyd Colliery ... ..	76	
" " Thrybergh Hall Colliery ... ..	92	
" " Tirydail Colliery ... ..	92	
" " Watergate Colliery ... ..	76	
" " Worsley Meanes Colliery ... ..	88	
Accidents, Fatal, at Mines in— <i>cont.</i>		
Algeria ... ..	310, 377	
Australia ... ..	310, 318	
Austria ... ..	310, 383-386	
Belgium ... ..	310, 395	
Bohemia ... ..	387	
Bosnia and Herzegovina ... ..	310, 390	
British Columbia ... ..	310, 339, 340	
British Guiana ... ..	310, 334	
Bulgaria ... ..	310, 399	
Cape Colony ... ..	310, 345-347	
Ceylon ... ..	310, 349	
Federated Malay States ... ..	310, 352	
France ... ..	310, 415, 416	
German Empire ... ..	310, 422-424	
Gold Coast ... ..	310, 353	
Greece ... ..	310, 434	
Greenland ... ..	406	
Holland ... ..	310, 436	
Hungary ... ..	310, 388	
India ... ..	310, 358, 359	
Italy ... ..	310, 441, 442	
Japan ... ..	310, 445	
Kimberley ... ..	345-347	
Mexico ... ..	310, 447	
Natal ... ..	310, 360	
Newfoundland ... ..	310, 362	
New South Wales ... ..	310, 318, 320	
New Zealand ... ..	310, 364	
Nova Scotia ... ..	310, 341	
Ontario ... ..	310, 342	
Portugal ... ..	310, 456	
Prussia ... ..	428-431	
Quebec ... ..	310, 343	
Queensland ... ..	310, 318, 323	
Rhodesia ... ..	310, 367	
Russia ... ..	310, 463	
Saxony ... ..	432	
Servia ... ..	310, 465	
Spain ... ..	310, 470	
Sweden ... ..	310, 472	
Switzerland ... ..	310, 475	
Tasmania ... ..	310, 318, 326	
Transvaal ... ..	310, 370	
United States ... ..	310, 485-487	
Victoria ... ..	310, 318, 327	
Western Australia ... ..	310, 318, 329	
" Brilliant Mine, Charters Towers ... ..	323	
" Carbonado Colliery, British Columbia ... ..	340	
" Great Boulder Mine, Western Australia ... ..	329	
" Harwick Mine, Co. Allegheny ... ..	486	
" Michel Colliery, British Columbia ... ..	340	
" Reunion Mine, Seville ... ..	470	
" Robinson Deep Gold Mine, Transvaal ... ..	370	
" Tercio, Mine at, Colorado ... ..	486	
" Vistabella Mine, Trinidad ... ..	373	
" Prussian Collieries ... ..	430, 431	
" at Quarries :		
" in United Kingdom ... ..	7, 26, 27, 100-110	
" from Blasting ... ..	26, 27, 103, 105-107	
" at different kinds of Quarries ... ..	102, 103	
" during descent or ascent ... ..	26, 27, 104, 105, 108	
" Explosives ... ..	26, 27, 106, 107	
" Falling from ledges ... ..	26, 27, 104, 108	

	Page.		Page.
Accidents, Fatal, at Quarries— <i>cont.</i>		Annam, Mineral output ... ..	487
"    "    Falling from paths, steps, or		Anthracite, Output of :	
ladders... ..	26, 27, 104, 108	United Kingdom ... ..	180
"    "    Falls of ground	26, 27, 103, 105, 106	France ... ..	413
"    "    Inclined and engine planes	26, 27, 104, 108, 109	Italy ... ..	441
"    "    in the several Inspection districts	26, 27	Pennsylvania ... ..	481
"    "    Machinery... ..	26, 27, 104, 108, 109	Portugal ... ..	455
"    "    Miscellaneous, inside and outside	26, 27, 104, 105, 108, 109	Russia ... ..	461
"    "    Railways, sidings, &c.	26, 27, 104, 108-110	Spain ... ..	468
Accidents, Fatal, at Quarries in :		Switzerland ... ..	473
Algeria ... ..	310, 377	United States ... ..	483
Belgium ... ..	310, 395	Antimony, Price in London ... ..	173
France ... ..	310, 415	"    Smelters and refiners ... ..	173
German Empire ... ..	310, 424	"    or Antimony ore, Output of :	
India ... ..	358	United Kingdom ... ..	173
Italy ... ..	310, 442	Algeria ... ..	376
Newfoundland ... ..	310, 362	Australia... ..	317
Russia ... ..	310, 463	Austria ... ..	383
Switzerland ... ..	310, 475	Bolivia ... ..	396
"    "    at Petroleum Workings :		China ... ..	402
Austria ... ..	383, 385	France ... ..	413
"    "    to Young persons ... ..	35, 72	Hungary... ..	387
"    Non-fatal, at Mines ... ..	28-31	Italy ... ..	441
"    "    Quarries ... ..	32, 33	Japan ... ..	444
Actinolite, Output of, Canada ... ..	338	Mexico ... ..	447
"    "    Ontario ... ..	342	New South Wales ... ..	319
Acts of Parliament relating to Mines and Quarries	5, 121	Portugal ... ..	456
Aden, Output of Salt ... ..	309, 316	Servia ... ..	465
Aire and Calder Navigation, Coal and Coke traffic	199	Spain ... ..	468
Alabama, Accidents ... ..	485	Turkey ... ..	476
"    Output of Iron Ore ... ..	485	United States ... ..	484
"    Persons employed ... ..	482	Victoria ... ..	337
"    Coal-cutting machines ... ..	479	Western Australia ... ..	339
Aldwarke Main Colliery Accident... ..	83	Antrim Co., Bauxite... ..	171, 180
Algeria, Accidents ... ..	310, 377	"    Chart and flint... ..	170, 183
"    Mineral output ... ..	309, 376	"    Clay ... ..	170, 185
"    Persons employed ... ..	308, 375	"    Coal ... ..	170, 189, 192
Alum, Output of :		"    Igneous rocks ... ..	170, 223
German Empire... ..	420	"    Iron ore ... ..	170, 226, 228, 230
Prussia ... ..	427, 428	"    Limestone ... ..	171, 261
Sweden ... ..	472	"    Salt ... ..	171, 273
Alum clay ( <i>see</i> Bauxite) ... ..	180	"    Sandstone ... ..	171, 276
Aluminium, Makers in United Kingdom ... ..	181	"    Persons employed ... ..	58, 60, 63, 67, 171
"    Output of United States ... ..	484	Apatite, Output of Norway ... ..	480
"    sulphate, Output of German Empire	420	"    "    Sweden ... ..	472
"    "    "    Prussia ... ..	428	Appeals ... ..	111, 114
Aluminous earths, Output of France ... ..	414	Arabia, Mining in ... ..	377
"    "    "    Spain ... ..	468	Argentine Republic, Mineral output	378
"    "    hematite, Production of Ireland	230	Argyll, Coal ... ..	168, 189, 192
Alum shale, Output of United Kingdom	10, 40, 147, 172	"    Gravel and sand ... ..	168, 200
"    "    "    Austria ... ..	382	"    Igneous rocks ... ..	168, 223
"    stone, Output of Italy ... ..	441	"    Limestone ... ..	169, 261
Alunite, Output of Australia ... ..	317	"    Sandstone ... ..	169, 275
"    "    New South Wales ... ..	319	"    Slate ... ..	169, 279
Amber, Output of India ... ..	356, 357	"    Persons employed ... ..	57, 63, 66, 169
Amblygonite, Output of Spain ... ..	468	Arkansas, Accidents... ..	485
Ambulance work ... ..	119	"    Persons employed ... ..	483
Amethyst, Output of France ... ..	414	"    Coal-cutting machines ... ..	479
Ammonite, Accidents with... ..	76, 78, 86	Arkite, Accidents with ... ..	86
Amvis, Accidents with ... ..	78, 86	Armagh Co., Igneous rocks... ..	170, 223
Anglesey, Copper precipitate ... ..	168, 208, 209	"    Limestone ... ..	171, 261
"    Gravel and sand ... ..	168, 220	"    Persons employed ... ..	67, 171
"    Igneous rocks ... ..	168, 222	Arsenic or Arsenic ore, Output of :	
"    Lead ... ..	249, 251	United Kingdom ... ..	10, 40, 147, 175, 176, 314
"    Limestone ... ..	169, 260	Canada ... ..	338
"    Ochre ... ..	169, 264, 265	France ... ..	413
"    Sandstone ... ..	169, 275	German Empire... ..	419
"    Zinc ore ... ..	169, 292, 293	Japan ... ..	444
"    Copper smelters ... ..	215	Ontario ... ..	342
"    Persons employed ... ..	63, 66, 169	Portugal ... ..	455
Ankylostomiasis, General Remarks ... ..	119	Prussia ... ..	427
"    Belgian Cases ... ..	395	Turkey ... ..	477
		Arsenic refiners ... ..	176
		Arsenical pyrites, Output of :	
		United Kingdom ... ..	10, 40, 147, 174, 314



	Page.
Arsenical pyrites, Output of :— <i>cont.</i>	
Italy ... ..	441
Saxony ... ..	432
Spain ... ..	468
Arsenious oxide, Output of United States ... ..	483
Aruba, Mineral Output ... ..	409
Asbestos, Output of :	
Canada ... ..	338
Quebec ... ..	343
Asbestos, Output of :	
Australia... ..	317
Canada ... ..	338
Cape Colony ... ..	344
France ... ..	414
Quebec ... ..	343
Russia ... ..	461
United States ... ..	483
Western Australia ... ..	329
Asphalt, Output of :	
Austria ... ..	382
Colombia... ..	403
Cuba ... ..	405
German Empire... ..	419
Hungary ... ..	387
Italy ... ..	441
Japan ... ..	444
Mexico ... ..	447
Prussia ... ..	427
Russia ... ..	461
Spain ... ..	468
Trinidad ... ..	372
Turkey ... ..	477
United States ... ..	483
Venezuela ... ..	488
Australia, Accidents ... ..	310, 311, 318
" Mineral Output... ..	309, 317
" Persons Employed ... ..	308, 316
Austria, Accidents ... ..	310, 384-386
" Mineral output ... ..	309, 382, 383
" Persons employed ... ..	308, 380, 381
Ayrshire, Clay ... ..	168, 184
" Coal ... ..	168, 189, 192
" Gravel and sand ... ..	168, 220
" Igneous rocks ... ..	168, 223
" Iron ore ... ..	168, 226, 227
" Limestone... ..	169, 261
" Sandstone ... ..	169, 275
" Blast furnaces ... ..	235, 241
" Coal traffic ... ..	198
" Death rate from accidents ... ..	99
" Persons employed ... ..	57, 60, 63, 66, 99, 169

## B.

BAHAMAS, Output of Salt ... ..	309, 330
" Persons employed ... ..	330
Banca, Output of Tin ... ..	406
" Persons employed ... ..	406
Banff, Gravel and sand ... ..	168, 220
" Igneous rocks... ..	168, 223
" Limestone ... ..	169, 261
" Sandstone ... ..	169, 275
" Persons employed ... ..	66, 169
Barbados, Minerals obtained in ... ..	330
Barium sulphate, Output of :	
United Kingdom ... ..	177-179
Spain ... ..	468
Barytes, Output of :	
United Kingdom ... ..	10, 40, 147, 177-179, 314
Bavaria ... ..	425
Belgium ... ..	391

	Page.
Barytes, Output of— <i>cont.</i>	
Canada ... ..	338
France ... ..	414
Newfoundland ... ..	361
Nova Scotia ... ..	341
Quebec ... ..	343
Saxony ... ..	431
Spain ... ..	468
United States ... ..	483
Basalt, diorite, &c. ( <i>see also</i> Igneous rocks), Output of	
Bavaria ... ..	425
Basic iron produced in United Kingdom... ..	236
Basutoland, Minerals ... ..	331
Bauxite, Output of :	
United Kingdom ... ..	10, 40, 147, 180, 314
France ... ..	414
United States ... ..	483
Bavaria, Mineral output ... ..	425, 426
" Persons employed ... ..	425
Bechuanaland Protectorate, Minerals ... ..	331
Bedfordshire, Chalk ... ..	166, 182
" Clay ... ..	166, 184
" Gravel and sand ... ..	166, 220
" Limestone ... ..	167, 260
" Sandstone ... ..	167, 275
" Persons employed ... ..	62, 65, 167
Belgium, Accidents ... ..	310, 395
" Mineral output ... ..	309, 394
" Persons employed ... ..	308, 391, 392
" Ankylostomiasis cases ... ..	395
" Coal Seams, particulars of ... ..	393
" Compulsory use of Safety Lamps ... ..	395
" Decline of female labour at Mines ... ..	392
Bellite, Accidents with ... ..	86
Berkshire, Chalk ... ..	166, 182
" Chert and flint ... ..	166, 183
" Clay ... ..	166, 184
" Gravel and sand ... ..	166, 220
" Limestone ... ..	167, 260
" Sandstone ... ..	167, 275
" Persons employed ... ..	62, 65, 167
Berwick, Igneous rocks ... ..	168, 223
" Sandstone ... ..	169, 275
" Persons employed ... ..	66, 169
Billiton, Output of Tin ... ..	406
" Persons employed ... ..	406
Birmingham Canal Navigation's Coal and Coke traffic... ..	199
Bismuth or Bismuth ore, Output of :	
Australia ... ..	317
Austria ... ..	382
Bolivia ... ..	396
German Empire ... ..	419
Hungary... ..	387
Japan ... ..	444
New South Wales ... ..	319
Queensland ... ..	322
Saxony ... ..	431
Spain ... ..	468
Tasmania... ..	325
Bituminous shale, Output of :	
France ... ..	413
Italy ... ..	441
Spain ... ..	468
Black tin ( <i>see</i> Tin ore).	
Blasting, Fatal accidents in Quarries ... ..	26, 27, 103, 105-107
Blast furnaces, Particulars of ... ..	237-242
" in operation from 1873 to 1904... ..	242
Blasting gelatine, Accidents with ... ..	86
Bluestone, Output of Australia ... ..	317
" Queensland ... ..	322
Bobbinite, Accidents with ... ..	75-78, 86
Bog ore, Output of Ireland ... ..	10, 20, 147, 181, 314
Bohemia, Accidents ... ..	387
" Persons employed ... ..	386
Boiler Explosions Acts, Prosecutions under ... ..	111
Boiler explosions at Mines... ..	22, 25, 28, 19, 93, 94



	Page.
Boiler explosions, Board of Trade inquiries ...	94, 111
Bolivia, Mineral output ... ..	309, 396
Bonaire, Salt workings ... ..	409
Boracite, Output of :	
German Empire ... ..	419
Prussia ... ..	427
Turkey ... ..	477
Borate of calcium, Output of Bolivia ... ..	396
"       "       "       Chili ... ..	401
Borax, Output of :	
Chili ... ..	400
Peru ... ..	453
United States ... ..	441
Boric acid, Output of Italy ... ..	441
Borneo (Dutch), Mineral output ... ..	406, 407
" (see also British North Borneo).	
Bosnia and Herzegovina, Accidents ... ..	310, 390
"       "       Mineral output ... ..	309, 389, 390
"       "       Persons employed ... ..	308, 389
Bower Colliery Accident ... ..	92
Brazil, Mineral output ... ..	397, 398
Breconshire, Coal ... ..	168, 189, 190, 192
"       Gravel and sand ... ..	168, 220
"       Iron ore ... ..	168, 226, 227
"       Limestone ... ..	169, 260
"       Sandstone ... ..	169, 275
"       Death-rate from accidents ... ..	100
"       Persons employed ... ..	57, 63, 66, 100, 169
Bridgewater Canals, Coal traffic ... ..	199
Briquettes, Production of, in Hungary ... ..	387
British Borneo, Output of Minerals ... ..	309, 331, 332
British Central Africa Protectorate, Minerals ... ..	332
British Columbia, Accidents ... ..	310, 311, 339, 340
"       Mineral output ... ..	339
"       Persons employed ... ..	339
British Guiana, Accidents ... ..	310, 334
"       Mineral output ... ..	309, 333, 334
"       Persons employed ... ..	308, 333
British New Guinea, Mineral output ... ..	309, 334, 335
"       "       Persons employed ... ..	308, 334
British Solomon Islands, Copper ... ..	335
Broken Hill Lead Mines (New South Wales), Cases of lead poisoning ... ..	321
Bromine, Production of the United States ... ..	483
Brown coal or Lignite, Output of :	
United Kingdom ... ..	259
Algeria ... ..	376
Australia ... ..	317
Austria ... ..	382
Bavaria ... ..	428
Bosnia and Herzegovina ... ..	389
Bulgaria ... ..	399
France ... ..	419
German Empire ... ..	419, 421
Greece ... ..	434
Hungary ... ..	388
Italy ... ..	441
New Zealand ... ..	363
Prussia ... ..	427
Roumania ... ..	458
Russia ... ..	461
Saxony ... ..	431
Servia ... ..	465
Spain ... ..	468
Victoria ... ..	327
Brown iron ore, Output of :	
United Kingdom ... ..	229
United States ... ..	485
Buckinghamshire, Chalk ... ..	166, 182
"       Clay ... ..	166, 184
"       Gravel and sand ... ..	166, 220
"       Limestone ... ..	167, 260
"       Persons employed ... ..	65, 167
Bulgaria, Accidents ... ..	310, 399
"       Mineral output ... ..	309, 399
"       Persons employed ... ..	308, 399

	Page.
Bulldog, "Special," powder, Accidents with	79
Bunker Coal, shipped coastwise	201, 202
Burnt cupreous pyrites treated at Metal Extraction Works	247
" " Metals extracted from	248
Bute, Igneous rocks	168, 223
" Sandstone	169, 275
" Persons employed	66, 169
<b>C.</b>	
"CABOOK," Output of Ceylon	348
Caithness, Gravel and Sand	168, 220
" Sandstone	169, 275
" Slate	169, 279
" Persons employed	66, 169
Calcium carbide, Output of Ontario	312
Calc spar, Output of United Kingdom	17, 260, 261
" " Iceland	406
Calder Colliery Accident	76
Caledonian Railway, Coal traffic	198
Cambridgeshire, Chalk	166, 182
" Clay	166, 184
" Gravel and sand	166, 220
" Limestone	167, 260
" Phosphate of lime	167, 268
" Persons employed	65, 167
Cambrite, Accidents with	86
Cameroons, Salt springs	399
Canada, Accidents	310, 311, 339-343
" Mineral output	309, 338
" Persons employed	308, 339-341, 343
" (see also British Columbia, Nova Scotia, and Ontario).	
Canal, Coal and coke traffic	199, 200
Canary Islands, Minerals worked	399
Cape Colony, Accidents	310, 345-347
" Mineral output	309, 344
" Persons employed	308, 344
" Commission of Inquiry into the Safety of Shafts	8
Carbonite, Accidents with	8
Cardigan, Clay	168, 184
" Copper ore	168, 208, 209
" Gravel and sand	168, 220
" Lead ore	169, 249, 251
" Sandstone	169, 277
" Silver	249, 251
" Slate	169, 277
" Zinc ore	169, 292, 293
" Persons employed	63, 66, 169
Carlrow Co., Igneous rocks	170, 223
" Limestone	171, 261
" Persons employed	67, 171
Carmarthenshire, Chert and flint	168, 183
" Clay	168, 184
" Coal	168, 189, 190, 191
" Limestone	169, 261
" Sandstone	169, 277
" Slate	169, 277
" Copper smelters	211
" Death-rate from accidents	99
" Persons employed	57, 63, 66, 99, 169
Carnarvonshire, Clay	168, 184
" Copper ore	208
" Gravel and sand	168, 220
" Igneous rocks	168, 223
" Lead ore	169, 249, 251
" Limestone	169, 261
" Manganese ore	169, 261
" Sandstone	169, 277



	Page.		Page.
Carnarvonshire, Silver ... ..	249, 261	Clackmannan, Clay ... ..	168, 184
" Slate ... ..	169, 279, 280	" Coal ... ..	168, 189, 192
" Zinc ore ... ..	169, 292, 293	" Igneous rocks ... ..	168, 223
" Persons employed ... ..	63, 66, 169	" Sandstone ... ..	169, 275
Cavan and Leitrim Railway, Coal traffic... ..	198	" Persons employed ... ..	57, 66, 169
Cavan Co., Limestone ... ..	171, 261	Clare Co., Gravel and sand ... ..	170, 221
" Persons employed ... ..	67, 171	" Igneous rocks ... ..	170, 223
Celebes, Gold... ..	407	" Sandstone... ..	171, 276
Celestine ( <i>see</i> Strontium sulphate).		" Persons employed ... ..	67, 171
Cement, Output of:		Clay, Output of United Kingdom ... ..	10, 40, 147, 183-185, 314
Algeria ... ..	376	" Production of:	
Bavaria ... ..	425	Algeria ... ..	376
Canada ... ..	338	Australia... ..	317
Denmark... ..	405	Belgium ... ..	391
France ... ..	414	France ... ..	414
Ontario ... ..	342	Japan ... ..	444
Quebec ... ..	343	Russia ... ..	461
Servia ... ..	465	Spain ... ..	468
Switzerland ... ..	474	Tunis ... ..	476
Tunis ... ..	476	United States ... ..	483
United States ... ..	483	Victoria ... ..	327
Certificates of competency, Legislation as to qualifica-		" Exports from United Kingdom ... ..	186, 187
tions ... ..	121	" Quarries, Fatal accidents ... ..	102, 103
" List of persons to whom		" Persons employed ... ..	64
granted in 1904... ..	124-133	Cleveland iron ore, Output of ... ..	225
Certificates of Service, do. do. ... ..	133	Coal, Output of United Kingdom ... ..	10, 40, 147, 187-189, 193, 309, 314
Ceylon, Accidents ... ..	310, 349	" in each Coal-field ... ..	190, 191
" Mineral output ... ..	309, 348	" County ... ..	166, 168, 170, 188, 189, 192
" Persons employed ... ..	308, 348	" Output of:	
Chalk, Output of United Kingdom 10, 40, 147, 182, 314		Algeria ... ..	309, 376
" Belgium ... ..	394	Annam ... ..	437
" Denmark ... ..	405	Australia ... ..	309, 317
" France ... ..	414	Austria ... ..	309, 382
Chalk Quarries, Fatal accidents ... ..	102, 103	Bavaria ... ..	425
" Persons employed ... ..	64	Belgium ... ..	309, 394
Channel Islands, Persons employed ... ..	308, 349	Bosnia and Herzegovina ... ..	309, 389
" Quantity of Stone exported ... ..	349	British Columbia... ..	339
Cheddite, Accidents with ... ..	86, 107	British Borneo ... ..	309, 331, 332
Chert and flint, Output of United Kingdom ... ..	10, 40, 147, 183, 314	Bulgaria ... ..	309, 398
Cheshire, Clay ... ..	166, 184	Canada ... ..	309, 338
" Coal... ..	166, 188, 192	Cape Colony ... ..	309, 344
" Gravel and sand ... ..	166, 220	Chili ... ..	309, 401
" Limestone ... ..	167, 260	China ... ..	309, 402
" Salt... ..	167, 272	Corea ... ..	309, 404
" Sandstone ... ..	167, 275	Dutch Borneo ... ..	406
" Coal traffic... ..	197	Dutch East Indies ... ..	309, 406
" Copper smelters ... ..	215	Formosa ... ..	309, 410
" Death-rate from accidents ... ..	99	France ... ..	309, 413
" Persons employed... ..	57, 62, 65, 99, 167	German Empire ... ..	309, 419, 421
" Zinc smelters ... ..	297	Greece ... ..	309, 434
Cheshire Lines Railway, Salt conveyed ... ..	273	Holland ... ..	309, 436
Chili, Mineral output ... ..	309, 400, 401	Hungary ... ..	309, 388
" Persons employed ... ..	308, 401	Illinois ... ..	484
China, Mineral wealth ... ..	309, 402, 403	India ... ..	309, 356
China clay and stone conveyed by rail and sea ... ..	185	Indo-China ... ..	309, 437
" Output of Cornwall and Devon ... ..	184	Italy ... ..	309, 441
" Belgium ... ..	394	Japan ... ..	309, 444
" France ... ..	414	Labuan ... ..	331
" Japan ... ..	444	Mexico ... ..	309, 447
" Russia ... ..	461	Natal ... ..	309, 360
" Spain ... ..	468	New South Wales ... ..	319
Chinese labour in the Transvaal, Introduction of ... ..	368	New Zealand ... ..	309, 363
Christmas Island, Phosphate of lime ... ..	349	Nova Scotia ... ..	311
Chrome iron, Production in United Kingdom ... ..	236	Ohio ... ..	484
Chromic iron ore, Output of:		Orange River Colony ... ..	309, 365
Australia... ..	317	Pennsylvania ... ..	484
Bosnia and Herzegovina ... ..	389	Peru ... ..	309, 453
Canada ... ..	338	Portugal... ..	309, 455
Greece ... ..	434	Prussia ... ..	427
New Caledonia ... ..	449	Queensland ... ..	322
New South Wales ... ..	319	Rhodesia ... ..	309, 367
Norway ... ..	450	Roumania... ..	309, 458
Quebec ... ..	343	Russia ... ..	309, 431, 462
Russia ... ..	461	Sarawak ... ..	332
Turkey ... ..	477	Saxony ... ..	431
United States ... ..	483		



	Page.		Page
Coal, Output of— <i>cont.</i>		Copper exported ... ..	211-213
Servia ... ..	309, 465	" extracted from Burnt Cupreous pyrites	215, 248
Spain ... ..	309, 468	" imported ... ..	214, 215
Sumatra ... ..	408	" obtained from British ores ... ..	147, 208, 209
Sweden ... ..	309, 472	" " " Foreign ores ... ..	215
Tasmania ... ..	325	" Price in the London market ... ..	210, 211
Tong-King ... ..	437	" Smelters in United Kingdom ... ..	215, 216
Transvaal ... ..	309, 369	Copper or Copper ore, Output of :	
Turkey ... ..	309, 477	United Kingdom 10, 40, 147, 208-210, 309, 314, 315	
United States ... ..	309, 483	Algeria ... ..	309, 376
Victoria ... ..	327	Argentine Republic ... ..	309, 378
Western Australia ... ..	329	Australia ... ..	309, 317
West Virginia ... ..	484	Austria ... ..	309, 382
" Output per person employed ... 7, 14, 15, 190, 191		Bolivia ... ..	309, 396
" exported from United Kingdom ... 193, 205-207		Bosnia and Herzegovina ... ..	309, 389
" imported into " " ... ..	204	British Columbia ... ..	339
" Average price in the several Coal-fields ... 191		Canada ... ..	309, 338
" " " in the several Counties ... 188, 189, 192		Cape Colony ... ..	309, 344
" Average Price in the London market ... 194, 195		Chili ... ..	309, 401
" " " at the pit's mouth ... 188, 189, 191, 192		Corea ... ..	309, 404
" " " at the several Ports ... ..	195	Cuba ... ..	309, 405
" Quantity retained for home consumption ... 193		France ... ..	309, 413
" " " per head of population ... 193		German Empire ... ..	309, 419
" shipped coastwise ... ..	201-203, 207	German South-West Africa ... ..	433
" " for use of steamers ... ..	193, 207	Hayti ... ..	309, 435
" and coke conveyed by railway, canal, &c. ... 196-200		Honduras ... ..	309, 437
" used in the blast furnaces of United Kingdom 235,		Hungary ... ..	309, 387, 388
237-242		India ... ..	309, 356
Coal-cutting Machines :		Italy ... ..	309, 441
Number in use in the United Kingdom ... 115, 116		Japan ... ..	309, 444
" " " United States ... ..	479, 480	Mexico ... ..	309, 447
Quantity of Coal obtained in United Kingdom by		Natal ... ..	309, 360
use of ... ..	115, 116	New Caledonia ... ..	309, 449
Quantity of Coal obtained in United States by use of 479		Newfoundland ... ..	309, 361
Coal-dust ( <i>see</i> Accidents).		New South Wales ... ..	319
Coal-fields of United Kingdom, List of ... ..	54	New Zealand ... ..	309, 363
" Fatal accidents ... ..	95-99	Norway ... ..	309, 450
" Mineral output ... ..	190, 191	Ontario ... ..	342
" Persons employed ... ..	55, 56, 191	Persia ... ..	309, 451
Coal mines, definition ... ..	53	Peru ... ..	309, 453
" Fatal accidents ... ..	72	Portugal ... ..	309, 456
" Mineral output from ... ..	190-192	Prussia ... ..	427
" Persons employed at ... ..	54-58, 191, 192	Quebec ... ..	343
" Regulation Act ... ..	5	Queensland ... ..	323
" " " Amendment Act, 1903 ... 121		Russia ... ..	309, 462
Cobalt and Nickel ores, Output of :		Servia ... ..	309, 465
United Kingdom ... ..	41, 207	South Australia ... ..	324
Australia ... ..	317	Spain ... ..	309, 468
Bolivia ... ..	396	Sweden ... ..	309, 472
Chili ... ..	401	Tasmania ... ..	325
German Empire ... ..	419	Turkey ... ..	309, 477
New Caledonia ... ..	449	United States ... ..	309, 484
New South Wales ... ..	319	Victoria ... ..	327
Prussia ... ..	427	Western Australia ... ..	329
Russia ... ..	462	Copper precipitate, Production of :	
Saxony ... ..	431	United Kingdom ... ..	10, 40, 147, 208-210, 314
Spain ... ..	468	Bolivia ... ..	396
United States ... ..	483	Portugal ... ..	455
Cochin China, Output of jet and salt ... ..	437	Coprolites ( <i>see</i> Phosphate of lime)	
Coke exported from United Kingdom ... 193, 205-207		" conveyed by railway ... ..	269
" shipped coastwise ... ..	201-203, 207	Coral, Production of Ceylon ... ..	348
" Output of :		Corea, Mineral Output ... ..	309, 404
Australia ... ..	317	" Persons employed ... ..	308, 404
British Columbia ... ..	339	Cork Co., Barytes ... ..	170, 177, 179
Canada ... ..	338	" Clay ... ..	170, 185
New South Wales ... ..	319	" Copper ore ... ..	170, 208, 209
Nova Scotia ... ..	341	" Gravel and sand ... ..	170, 221
Colombia, Mineral output ... ..	309, 404	" Limestone ... ..	171, 261
Colorado, Accidents ... ..	485-487	" Ochre ... ..	171, 264
" Persons employed ... ..	482	" Sandstone ... ..	171, 276
" Coal cutting machines ... ..	479	" Slate ... ..	171, 279
Commonwealth of Australia ( <i>see</i> Australia).		" Persons employed ... ..	63, 67, 171
Comparative tables, 1873-1904, Persons employed,		Cornwall, Arsenic ... ..	167, 175
Mineral output, Deaths from Accidents and Death		" Arsenical pyrites ... ..	167, 174
rates ... ..	38-45	" Chert and flint ... ..	168, 183
Congo Free State ... ..	404	" China clay and stone ... ..	184



	Page.
Cornwall—cont.	
Clay ... ..	166, 184
Copper ore ... ..	166, 208, 209
Gravel and sand ... ..	166, 220
Igneous rocks ... ..	166, 222
Limestone ... ..	167, 260
Mica ... ..	167, 264
Sandstone ... ..	167, 275
Silver ore ... ..	167, 276
Slate ... ..	167, 279
Tin ore ... ..	167, 284-286
Wolfram ... ..	167, 291
Arsenic refiners ... ..	176
Death-rate from accidents ... ..	100
Tin smelters ... ..	290
Persons employed ... ..	62, 65, 100, 167
Special Rules for Metalliferous Mines ... ..	119
Cortonwood Colliery Fire ... ..	88
Corundum, Output of :	
Canada ... ..	338
Ontario ... ..	342
United States ... ..	483
Costa Rica, Output of Gold ... ..	309, 404
County summaries, Output of Mines under the Coal Mines Act ... ..	150-153
" " Output of Mines under the Metalliferous Mines Act ... ..	154-157
" " Output of Quarries ... ..	158-163
" " Output of Shallow workings, Brine wells, &c. ... ..	164-165
" " Output of all Mines, Quarries, &c. ... ..	166-171
" " Persons employed in Coal Mines ... ..	57, 58
" " " " Iron Mines ... ..	59, 60
" " " " Other Mines ... ..	62, 63
" " Persons employed under the Coal Mines Act ... ..	151, 153
" " " " employed under the Metalliferous Mines Act ... ..	155, 157
" " " " employed under the Quarries Act ... ..	65-67, 159, 161, 163
" " " " employed under all three Acts ... ..	167, 169, 171
" " Death-rates ... ..	99, 100
Coventry Canal, coal traffic ... ..	199
Crocidolite, Production of Cape Colony ... ..	344
Cruelty to Animals Act, Prosecutions under ... ..	111
Cryolite, Output of Greenland ... ..	406
Cuba, Mineral output ... ..	309, 405
Cumberland, Barytes ... ..	166, 177, 178
Clay ... ..	166, 184
Coal ... ..	166, 188, 192
Gravel and sand ... ..	166, 220
Gypsum ... ..	166, 221
Igneous rocks ... ..	166, 222
Iron ore ... ..	166, 226-229
Lead ore ... ..	167, 249, 250
Limestone ... ..	167, 260
Sandstone ... ..	167, 275
Silver ... ..	249, 250
Slate ... ..	167, 279, 280
Zinc ore ... ..	167, 292, 293
Blast furnaces ... ..	235, 237
Coal traffic ... ..	197, 198
Death-rate from accidents ... ..	99
Persons employed ... ..	57, 59, 62, 65, 99, 167
Cupreous iron pyrites, Output of :	
Canada ... ..	338
Italy ... ..	441
Norway ... ..	450
Portugal ... ..	456
Saxony ... ..	432
Spain ... ..	469
Cupreous iron pyrites, imported ... ..	247
" " " " treated at the Metal Extraction Works ... ..	247
Curaçao, Minerals worked ... ..	409
Cyprus, Mineral output ... ..	309, 350

## D.

	Page.
DEAN and Chapter Colliery Accident ... ..	91
Deaths from Accidents at Mines in United Kingdom ... ..	7, 9, 23, 25, 42, 43, 67-100
" " at Quarries in United Kingdom ... ..	7, 9, 27, 100-110
" " (see also under "Accidents").	
Death-rates in each inspection-district ... ..	34
" in the several Coal-fields ... ..	95
" in the principal Mining Counties ... ..	99, 100
" in all Mines per 1000 persons employed from 1895-1904 ... ..	69
" " " " 1873-1904 ... ..	70
" " " " 1851-1904 ... ..	122, 123
" per million tons of mineral raised ... ..	44, 70
" Mines under the Coal Mines Act ... ..	8, 34, 44
" " Metalliferous Mines Act ... ..	8, 34, 45
" of persons under and above 16 years of age ... ..	8, 117, 118
" Quarries under the Quarries Act ... ..	8, 34, 101, 102
" in different kinds of Quarries ... ..	102
" from accidents at Mines :	
United Kingdom ... ..	8, 34, 69-71, 311, 315
Algeria ... ..	311, 377
Australia ... ..	311, 318
Austria ... ..	311, 383
Belgium ... ..	311, 395
Bohemia ... ..	387
Bosnia and Herzegovina ... ..	311, 390
British Columbia ... ..	311, 340
British Guiana ... ..	311, 334
Bulgaria ... ..	311, 399
Cape Colony ... ..	311, 345
Ceylon ... ..	311, 349
Federated Malay States ... ..	311, 352
France ... ..	311, 415, 416
German Empire ... ..	311, 422, 423
Gold Coast ... ..	311, 353
Greece ... ..	311, 434
Holland ... ..	311, 436
Hungary ... ..	311, 388
India ... ..	311, 358, 359
Italy ... ..	311, 441
Japan ... ..	311, 445
Kimberley ... ..	311, 345
Mexico ... ..	311, 447
Natal ... ..	311, 360
Newfoundland ... ..	311, 362
New South Wales ... ..	311, 318, 320
New Zealand ... ..	311, 364
Nova Scotia ... ..	311, 341
Ontario ... ..	311, 342
Orange River Colony ... ..	311, 366
Portugal ... ..	311, 456
Prussia ... ..	429
Quebec ... ..	311, 343
Queensland ... ..	311, 318, 323
Russia ... ..	311, 463
Saxony ... ..	432
Servia ... ..	311, 465
South Australia ... ..	311, 324
Spain ... ..	311, 470
Sweden ... ..	311, 472
Switzerland ... ..	311, 475
Tasmania ... ..	311, 318, 326
Transvaal ... ..	311, 370
Trinidad ... ..	311, 373
United States ... ..	311, 485-487
Victoria ... ..	311, 318, 327
Western Australia ... ..	311, 318, 329



	Page.		Page
Death-rates from accidents at Petroleum Wells :		Diagram, Deaths per 1,000,000 tons of mineral raised,	
Austria ... ..	383	1873-1904 ... ..	70
" from accidents at Quarries :		Death-rates from Accidents per 1,000 persons	
United Kingdom... 8, 34, 101, 102, 311, 315		employed underground and aboveground at	
Algeria ... ..	311, 377	all Mines, 1873-1904 ... ..	70
Belgium ... ..	311, 395	Death-rates from Accidents underground,	
France ... ..	311, 415	1873-1904 ... ..	71
Germany ... ..	311, 424	Death-rates from Accidents from explosions	
India ... ..	358	of firedamp, 1873-1904 ... ..	75
Italy ... ..	311, 442	Death-rates from Accidents from falls of	
Newfoundland ... ..	311, 362	ground, 1873-1904 ... ..	80
Russia ... ..	311, 463	Death-rates from Shaft Accidents, 1873-1904	83
Switzerland ... ..	311, 475	Death-rates from Miscellaneous underground	
Trinidad ... ..	311, 373	Accidents, 1873-1904 ... ..	85
Denby Grange Colliery Accident ... ..	77	Death-rates from Accidents on surface ... ..	93
Denmark, Mineral output ... ..	405	Death-rates of Men and Boys employed at	
Denbighshire, Chert and flint ... ..	168, 183	Mines ... ..	117
" Clay ... ..	168, 184	Death-rates from Accidents at Quarries and at	
" Coal ... ..	168, 189, 192	Mines, 1896-1904 ... ..	101
" Gravel and sand ... ..	168, 220	Number of Persons employed and Number of	
" Igneous rocks ... ..	168, 222	Deaths from Accidents from all causes at	
" Iron ore ... ..	168, 226, 227	Mines, 1851-1904 ... ..	68
" Lead ore ... ..	169, 249, 251	Output and Export of Coal, 1873-1904 ... ..	187
" Limestone ... ..	169, 260	Output and Import of Iron ore, 1873-1904 ... ..	225
" Sandstone ... ..	169, 275	Proportion of deaths from different classes	
" Silver ... ..	249, 251	of Accidents, 1904 ... ..	73
" Slate ... ..	169, 279, 280	Prices of Coal and Iron, 1873-1904 ... ..	298
" Zinc ore ... ..	169, 292, 293	Prices of Copper, Lead, Tin, and Zinc, 1873-	
" Blast furnaces ... ..	235, 241	1904 ... ..	298
" Coal traffic ... ..	199	Diamonds, Output of :	
" Death-rate from accidents ... ..	99	Australia... ..	317
" Persons employed ... .. 57, 63, 66, 99, 169		Borneo, Dutch ... ..	407
" Zinc smelters ... ..	297	Brazil ... ..	397
Derbyshire, Barytes ... ..	166, 177, 178	British Guiana ... ..	333
" Chert and flint... ..	166, 183	Cape Colony ... ..	344
" Clay ... ..	166, 184	Orange River Colony ... ..	365
" Coal ... ..	166, 188, 192	New South Wales ... ..	319
" Fluorspar ... ..	167, 217	Transvaal ... ..	369
" Gravel and sand ... ..	166, 220	District statistics of persons employed, Output and	
" Gypsum... ..	166, 221	accidents ... ..	11-35
" Iron ore... ..	166, 226-227	Districts, Mines inspection, List of ... ..	46, 47
" Iron pyrites ... ..	166, 246	Dominica Sulphur mine ... ..	350
" Lead ore ... ..	167, 249, 250, 252	Donegal Co., Bog ore ... ..	171
" Limestone ... ..	167, 260	" Igneous rocks ... ..	170, 223
" Manganese ore... ..	167, 262	" Limestone ... ..	171, 261
" Ochre ... ..	167, 264, 265	" Sandstone ... ..	171, 276
" Sandstone ... ..	167, 275	" Persons employed ... ..	67, 171
" Zinc ore... ..	167, 292, 293	Dorsetshire, Chalk ... ..	166, 182
" Blast furnaces ... ..	235, 237	" Chert and flint ... ..	166, 183
" Coal traffic ... ..	196, 197	" Clay ... ..	166, 184
" Death-rate from accidents ... ..	99	" Gravel and sand ... ..	166, 220
" Lead smelters ... ..	258	" Limestone ... ..	167, 260
" Persons employed ... .. 57, 62, 65, 99, 167		" Potters' clay ... ..	184
Desilverizers in the United Kingdom ... ..	258, 259	" Persons employed ... ..	62, 65, 167
Detonators, Accidents with ... ..	86, 107	Down Co., Gravel and sand ... ..	170, 221
Devonshire, Arsenic... ..	167, 175, 176	" Igneous rocks ... ..	170, 223
" Barytes ... ..	166, 177	" Limestone ... ..	171, 261
" Chert and flint ... ..	166, 183	" Sandstone ... ..	171, 276
" China clay ... ..	184	" Persons employed ... ..	63, 67, 171
" Clay ... ..	166, 184	Dublin Co., Clay ... ..	170, 185
" Copper ore ... ..	166, 208, 209	" Gravel and sand ... ..	170, 221
" Gravel and sand ... ..	166, 220	" Igneous rocks ... ..	170, 223
" Igneous rocks ... ..	166, 222	" Limestone ... ..	171, 261
" Limestone ... ..	167, 260	" Sandstone ... ..	171, 276
" Manganese ore ... ..	167, 262	" Persons employed ... ..	67, 171
" Ochre ... ..	167, 264, 265	Dumbarton, Clay ... ..	168, 184
" Potters' clay ... ..	184	" Coal ... ..	168, 189, 192
" Sandstone ... ..	167, 275	" Gravel and sand ... ..	168, 220
" Slate ... ..	167, 279	" Igneous rocks... ..	168, 223
" Tin ore ... ..	167, 284, 285	" Iron ore ... ..	168, 226, 227
" Arsenic refiners ... ..	176	" Limestone ... ..	169, 261
" Persons employed ... .. 59, 62, 65, 167		" Sandstone ... ..	169, 275
" Special Rules for Metalliferous Mines ... ..	119	" Slate ... ..	169, 279
Diagram, Annual Death-rates from various causes of		" Coal traffic ... ..	198, 200
Accidents per 1,000 persons employed at		" Death-rate from Accidents... ..	100
Mines, 1875-1904 ... ..	68	" Persons employed ... .. 57, 63, 66, 100, 169	
		Dumfries, Clay ... ..	168, 184
		" Coal ... ..	168, 189, 192



	Page.
Dumfries, Lead ore ... ..	169, 249, 252
" Limestone ... ..	169, 261
" Sandstone ... ..	169, 276
" Silver ... ..	249, 252
" Zinc ore ... ..	169, 292, 294
" Coal traffic ... ..	198
" Persons employed ... ..	57, 63, 66, 169
Durham, Barytes ... ..	166, 177, 178
" Clay ... ..	166, 184
" Coal ... ..	166, 188, 192
" Fluorspar ... ..	167, 217
" Gravel and sand ... ..	166, 220
" Igneous rocks ... ..	166, 222
" Iron ore ... ..	166, 226, 228, 229, 231
" Lead ore ... ..	167, 249, 250
" Limestone ... ..	167, 260
" Salt... ..	167, 272
" Sandstone ... ..	167, 275
" Silver ... ..	249, 250
" Blast furnaces ... ..	235, 237
" Coal traffic ... ..	197
" Copper smelters ... ..	216
" Death-rate from Accidents ... ..	99
" Lead smelters ... ..	258
" Persons employed ... ..	57, 59, 62, 65, 99, 167
Dutch East Indies, Mineral output ... ..	309, 406-408
" " " Persons employed ... ..	308, 406, 408
" Guiana, Output of Gold ... ..	309, 408
" West Indies, Mineral output ... ..	309, 409
Duxbury Park Colliery Accident ... ..	76, 77
Dynamite, Accidents with ... ..	107

## E.

EASINGTON COLLIERY ACCIDENT... ..	88, 89
Ecuador, Output of Gold and Silver ... ..	309, 409
Edinburghshire, Clay ... ..	168, 184
" Coal ... ..	168, 189, 192
" Gravel and sand... ..	168, 220
" Igneous rocks ... ..	168, 223
" Iron ore ... ..	168, 226, 227
" Limestone ... ..	169, 261
" Oil shale ... ..	169, 266
" Sandstone ... ..	169, 276
" Coal traffic ... ..	198
" Death-rate from accidents ... ..	99
" Persons employed ... ..	57, 63, 66, 99, 169
Education (Scotland) Act, 1901, Prosecutions under ... ..	111
Egypt, Mineral wealth ... ..	409, 410
Eldon Colliery Accident ... ..	91
Electric fuse, Accidents with ... ..	87, 106
Electricity, Accidents caused by ... ..	76, 77, 88, 91, 92
" Special Rules ... ..	121, 134-139
Electronite, Accidents with ... ..	86
Elgin, Gravel and sand ... ..	168, 220
" Igneous rocks ... ..	168, 223
" Sandstone ... ..	169, 276
" Persons employed ... ..	66, 169
Emeralds, Output of Colombia ... ..	403
Emery, Output of:	
Bavaria ... ..	425
Greece ... ..	434
Turkey ... ..	477
United States ... ..	483
Employment of boys at Mines ... ..	117-119
Employment of females at Mines... ..	55
Employment of Children Act, 1903 ... ..	54
England, Summary of mineral output ... ..	148

	Page
Eritrea, Gold Mines and Salt Workings ... ..	410
Essex, Chalk ... ..	166, 182
" Chert and flint ... ..	166, 183
" Clay ... ..	166, 184
" Gravel and sand ... ..	166, 220
" Persons employed ... ..	65, 167
Examinations for Managers' Certificates, List of Secretaries to Boards ... ..	46, 47
Exhall Colliery Accident ... ..	92
Explosions of fire-damp or coal-dust in the Mines of the United Kingdom, Accidents from 22, 23, 28-31, 35, 42, 43, 73-78	
" Accidents from, classified according to kind of Mine and cause ... ..	74, 75
" of fire-damp or coal-dust in the Mines of:	
Austria ... ..	386
Prussia ... ..	430, 431
(See also under "Accidents.")	
Explosives, Accidents with, at Mines 22-25, 28-31, 78, 85-88	
" " " Quarries ... ..	26, 27, 32, 33, 106, 107
(See also under "Accidents.")	
" in Coal Mines Order, remarks ... ..	75, 115
Exports of Clay ... ..	186, 187
" Coal, coke, &c. ... ..	193, 205-207
" Copper and copper ore ... ..	211-213
" Gold bullion and specie ... ..	219
" Iron ore ... ..	233, 234
" Iron and steel ... ..	244, 245
" Lead and lead ore ... ..	254-257
" Patent fuel ... ..	193, 205-207
" Quicksilver ... ..	271
" Roofing slates ... ..	282, 283
" Salt ... ..	274
" Silver bullion and specie ... ..	277
" Tin ... ..	289
" Zinc and zinc ore ... ..	295, 296

## F.

FACTORY AND WORKSHOP ACTS, Prosecutions ... ..	114
Falls of Ground, Accidents from, in Mines 22-25, 28-31, 35, 73, 78-82	
" " " Quarries 26, 27, 32, 33, 103, 105, 106	
(See also under "Accidents.")	
Faroe Islands, Coal deposits ... ..	405
Fatal Accidents (see "Accidents, Fatal")	
Faversham powder, Accidents with ... ..	86
Federated Malay States, Accidents ... ..	310, 352
" " Mineral output ... ..	309, 351, 352
" " Persons employed ... ..	308, 351
Felspar, Output of:	
Bavaria ... ..	425
Canada ... ..	338
Norway ... ..	450
Ontario ... ..	342
Quebec ... ..	343
Sweden ... ..	472
United States ... ..	483
Fermanagh Co., Gravel and sand ... ..	170, 221
" Limestone ... ..	171, 261
" Sandstone ... ..	171, 276
" Persons employed... ..	67, 171
Ferro-manganese (see Iron) ... ..	236
Fife, Clay ... ..	168, 184
" Coal ... ..	168, 189, 192
" Gravel and sand ... ..	168, 220
" Igneous rocks ... ..	168, 223
" Iron ore ... ..	168, 226, 227

	Page.
Fife, Limestone ... ..	169, 261
" Sandstone ... ..	169, 276
" Coal traffic ... ..	198
" Death-rate from Accidents ... ..	100
" Persons employed ... ..	57, 60, 63, 66, 100, 169
Fireclay, Output of:	
United Kingdom ... ..	15
Coalfields... ..	190
Australia... ..	317
Bavaria ... ..	425
Canada ... ..	338
Cape Colony ... ..	344
France ... ..	414
New South Wales ... ..	319
Sweden ... ..	472
Tunis ... ..	476
Fires underground in Mines, Accidents ... ..	22, 23, 75, 85, 88
Fire-damp or coal-dust, Accidents from ... ..	22, 23, 28-31, 35, 42-43, 73-78
Fire-damp, Ignitions of, caused by Permitted Explosives ... ..	78
Flage, Output of:	
Algeria ... ..	376
Belgium ... ..	394
Canada ... ..	338
France ... ..	414
Quebec ... ..	343
Tunis ... ..	476
Flint and chert, Output of:	
United Kingdom ... ..	10, 40, 147, 183, 314
Belgium ... ..	394
France ... ..	414
Tunis ... ..	476
United States ... ..	483
Flintshire, Chert and flint ... ..	168, 183
" Clay ... ..	168, 184
" Coal ... ..	168, 189, 192
" Gravel and sand ... ..	168, 220
" Iron ore ... ..	168, 226, 228, 230
" Lead ore... ..	169, 249, 251, 252
" Limestone ... ..	169, 260
" Oil shale... ..	169, 266
" Sandstone ... ..	169, 275
" Silver ... ..	249, 251, 252
" Zinc ore ... ..	169, 292, 294
" Blast furnaces ... ..	235, 241
" Death-rate from Accidents ... ..	99
" Lead smelters ... ..	258
" Persons employed ... ..	57, 60, 63, 66, 99, 169
Fluorspar, Output of:	
United Kingdom ... ..	10, 40, 147, 217, 218, 314
Bavaria ... ..	425
France ... ..	414
Saxony ... ..	432
Spain ... ..	469
United States ... ..	483
Forfar, Clay ... ..	168, 184
" Gravel and sand ... ..	168, 220
" Igneous rocks ... ..	168, 223
" Sandstone ... ..	169, 276
" Persons employed ... ..	66, 169
Formosa, Mineral output ... ..	410, 411
Forth and Clyde Canal, Coal and Coke traffic ... ..	200
Fossil fuel, Production of Italy ... ..	441
France, Accidents ... ..	310, 415, 416
" Mineral output ... ..	309, 418-415
" Persons employed ... ..	308, 412, 413
French Guiana, Mineral output ... ..	309, 416
Fuller's earth, Output of:	
United Kingdom ( <i>see</i> Clay) ... ..	184
France ... ..	414
Morocco ... ..	448
Turkey ... ..	477
United States ... ..	483
Furnaces, Blast, in United Kingdom, particulars of ... ..	237-242
Furness Railway, Coal carried by... ..	196
Fuzes, Accidents with ... ..	76, 77, 87, 106

## G.

	Page.
GALENA ( <i>see</i> Lead ore) ... ..	248-253
Galway Co., Gravel and sand ... ..	170, 220
" Igneous rocks ... ..	170, 223
" Limestone ... ..	171, 261
" Sandstone ... ..	171, 276
" Persons employed ... ..	67, 171
Gambia, Mineral resources... ..	352
Ganister ( <i>see</i> Sandstone) ... ..	275, 276
Garnet, Output of German East Africa ... ..	416
" " Spain ... ..	469
" " United States ... ..	483
Gas, Carburetted hydrogen, Output of Italy ... ..	441
Gelatine-dynamite, Accidents with ... ..	86, 107
Gelignite, Accidents with ... ..	86, 107
Geloxite, Accidents with ... ..	86
General remarks:	
Ambulance work ... ..	119
Ankylostomiasis ... ..	119
Appeal-Case— <i>Soutar v. Clark</i> ... ..	114
Coal-cutting machinery ... ..	115, 116
Employment of boys at mines ... ..	117-119
Explosives in Coal Mines Order ... ..	115
Hygiene of the Mines ... ..	119
Legislation ... ..	121
Locks of Safety Lamps ... ..	120, 121
Rescue Stations... ..	120
Roof Ripping without explosives ... ..	121
Special Rules <i>re</i> Electricity ... ..	121
General Summary of the Mineral Output of:	
United Kingdom for 1903 and 1904 ... ..	10, 147
British Empire " " ... ..	309, 314, 315
Foreign countries " " ... ..	309
Georgia, Persons employed at Coal Mines ... ..	483
German East Africa, Mineral deposits ... ..	416
" South-West Africa, Minerals found in ... ..	433
" Empire, Accidents... ..	310, 422-424
" " Mineral output ... ..	309, 419-422
" " Persons employed ... ..	308, 418, 419
Gerrard, John, Remarks on rope "cappings" ... ..	83
Glamorganshire, Clay ... ..	168, 184
" Coal ... ..	168, 189, 190, 192
" Iron ore ... ..	168, 226-228, 230
" Limestone ... ..	169, 260
" Sandstone ... ..	169, 275
" Arsenic refiners ... ..	176
" Blast furnaces ... ..	235, 241
" Coal traffic ... ..	197
" Copper smelters ... ..	216
" Death-rate from Accidents ... ..	99
" Lead smelters ... ..	258
" Persons employed ... ..	57, 60, 63, 66, 99, 169
" Tin smelters ... ..	290
" Zinc smelters ... ..	297
Glasgow and South Western Railway, Coal carried ... ..	198
Gloucestershire, Clay ... ..	166, 184
" Coal ... ..	166, 188, 192
" Gravel and sand ... ..	166, 220
" Iron ore ... ..	166, 226, 228, 229
" Limestone ... ..	167, 260
" Ochre ... ..	167, 264, 265
" Sandstone ... ..	167, 275
" Strontium sulphate ... ..	167, 283
" Coal traffic ... ..	196, 197
" Death-rate from Accidents ... ..	99
" Lead smelters ... ..	258



	Page.
Gloucestershire, Persons employed	57, 59, 62, 65, 99, 167
"    Zinc smelters	297
Gold bullion and specie exported and imported	219
"    extracted from foreign cupreous pyrites	219, 248
"    ore, Imported	219
Gold or Gold quartz, Output of :	
United Kingdom	10, 40, 147, 218, 219, 309, 314, 315
Abyssinia	309, 375
Argentine Republic	309, 378
Aruba	409
Australia	309, 317
Austria	309, 382
Bolivia	309, 396
Brazil	309, 398
British Borneo	309, 332
British Columbia	339
British Guiana	309, 333, 334
British New Guinea	309, 335
Canada	309, 338
Cape Colony	309, 344
Chili	309, 401
China	309, 403
Colombia	309, 404
Congo Free State	309, 404
Corea	309, 404
Costa Rica	309, 404
Dutch Borneo	407
Dutch East Indies	309, 407, 408
Dutch Guiana	309, 408
Dutch West Indies	309, 409
Ecuador	309, 409
Federated Malay States	309, 351, 352
Formosa	309, 410, 411
France	309
French Guiana	309, 416
German East Africa	309, 416
German Empire	309, 420
Gold Coast	309, 353
Honduras	309, 437
Hungary	309, 387, 338
India	309, 356
Italy	309, 411
Ivory Coast	442
Japan	309, 444
Madagascar	309, 446
Mexico	309, 447
Natal	309, 360
Newfoundland	309, 361
New South Wales	319
New Zealand	309, 363
Nicaragua	309, 449
Norway	309, 450
Nova Scotia	341
Ontario	342
Panama	309, 451
Peru	309, 453
Porto Rico	309, 454
Portugal	309, 456
Portuguese East Africa	457
Prussia	427
Quebec	343
Queensland	322
Rhodesia	309, 367
Russia	309, 462
Sarawak	332
Senegal	309, 464
Servia	309, 465
Siam	309, 466
South Australia	324
Spain	309, 469
Sumatra	408
Tasmania	326
Transvaal	309, 369, 369
Turkey	309, 477
United States	309, 484

	Page.
Gold or Gold quartz, Output of— <i>cont.</i>	
Uruguay	309, 487
Venezuela	309, 488
Victoria	327
Western Australia	329
Gold Coast, Accidents	310, 353
"    Quantity of Gold exported	309, 353
"    Persons employed	308, 353
Grand Canal, Coal traffic	200
Granite, Output of :	
United Kingdom (included with Igneous rocks)	222, 223
Australia	317
Bavaria	425
British Guiana	333
Canada	338
Ceylon	348
Newfoundland	361
Norway	450
Quebec	343
Queensland	322
Graphite, Output of :	
Australia	317
Austria	382
Bavaria	425
Canada	338
Ceylon	348
France	413
German Empire	419
India	356
Italy	441
Japan	444
Mexico	447
Ontario	342
Quebec	343
Spain	469
Sweden	472
United States	483
Western Australia	329
Gravel and sand, Output of :	
United Kingdom	10, 40, 147, 220, 221, 314
Algeria	376
Belgium	394
Canada	338
Ceylon	348
France	414
Newfoundland	361
Tunis	476
Great Central Railway, Coal and Coke carried	196
Great Eastern Railway, Coprolites conveyed	269
Great Laxey Mine Accident	92
Great Northern Railway, Coal carried	196
"    "    Salt conveyed	274
Great Southern and Western Railway, Coal traffic	198
Great Western Railway, Coal and Coke carried	196
Greece, Accidents	310, 434
"    Mineral output	309, 434
"    Persons employed	308, 434
Greenland, Output of Cryolite	406
"    Persons employed	308, 406
Grindstones, Output of :	
Canada	338
Nova Scotia	341
United States	483
Guano, Output of Chili	401
Guatemala, Mineral deposits	435
Gum, Kauri, Production of New Zealand	363
Gunpowder, Accidents with	86, 87, 107
Gypsum, Output of :	
United Kingdom	10, 40, 147, 221, 222, 314
Algeria	376
Australia	317
Bavaria	426
Canada	338
Cyprus	350
France	414



	Page.		Page.
Kilkenny Co., Slate ... ..	171, 279	Lead and lead ore, Imported ... ..	256, 257
" Coal traffic ... ..	198, 200	Lead and lead ore, Output of :	
" Persons employed ... ..	58, 67, 171	United Kingdom ... ..	10, 41, 147, 249-253, 309, 314, 315
Kimberley Diamond Mines, Accidents at ...	345-347	Algeria ... ..	309, 376
" Persons employed at ... ..	344, 345	Australia ... ..	309, 317
Kincardine, Gravel and sand ... ..	168, 220	Austria ... ..	309, 383
" Igneous rocks ... ..	168, 223	Belgium ... ..	309, 394
" Sandstone ... ..	169, 276	Bolivia ... ..	309, 396
" Persons employed ... ..	66, 169	British Columbia ... ..	309, 339
King's County, Bog ore ... ..	171	Canada ... ..	309, 338
" Gravel and sand ... ..	170, 221	Chili ... ..	309, 401
" Limestone ... ..	171, 261	China ... ..	309, 402
" Sandstone ... ..	171, 276	France ... ..	309, 413
" Persons employed ... ..	67, 171	German Empire ... ..	309, 419
Kinross, Clay ... ..	168, 184	Greece ... ..	309, 434
" Coal ... ..	168, 189, 192	Honduras ... ..	309, 437
" Igneous rocks ... ..	168, 223	Hungary ... ..	309, 388
" Persons employed ... ..	57, 66, 169	Italy ... ..	309, 441
Kirkcudbright, Igneous rocks ... ..	168, 223	Japan ... ..	309, 444
" Persons employed ... ..	66, 169	Mexico ... ..	309, 447
		New Caledonia ... ..	309, 449
		New South Wales ... ..	319
		Norway ... ..	450
		Ontario ... ..	342
		Peru ... ..	309, 453
		Portugal ... ..	309, 456
		Prussia ... ..	427
		Quebec ... ..	343
		Queensland ... ..	323
		Rhodesia ... ..	309, 367
		Russia ... ..	309, 463
		Servia ... ..	309, 465
		South Australia ... ..	324
		Spain ... ..	309, 469
		Sweden ... ..	309, 472
		Tasmania ... ..	309, 326
		Tunis ... ..	309, 476
		Turkey ... ..	309, 478
		United States ... ..	309, 484
		Lead poisoning cases at Broken Hill Mines (New South Wales) ... ..	321
		Leeds and Liverpool Canal Co. Coal traffic ... ..	199
		Leeward Islands ( <i>see</i> Redonda).	
		Legislation relating to Mines in :	
		United Kingdom ... ..	131
		Mexico ... ..	447
		New South Wales ... ..	321
		New Zealand ... ..	364
		Orange River Colony ... ..	366
		South Australia ... ..	324
		Transvaal ... ..	368, 371
		Victoria ... ..	327, 328
		Western Australia ... ..	329, 330
		Leicestershire, Clay ... ..	166, 184
		" Coal ... ..	166, 188, 192
		" Gravel and sand ... ..	166, 220
		" Igneous rocks ... ..	166, 222
		" Iron ore ... ..	166, 226, 231
		" Limestone ... ..	167, 260
		" Slate ... ..	167, 279
		" Blast furnaces ... ..	235, 238
		" Coal traffic ... ..	196, 197, 199
		" Copper smelters ... ..	216
		" Death-rate from accidents ... ..	99
		" Lead smelters ... ..	258
		" Persons employed ... ..	57, 59, 62, 65, 99, 167
		" Zinc smelters ... ..	297
Lancashire and Cheshire Coal-fields, Counties ... ..	54		
" " " Fatal Accidents ... ..	95-98		
" " " Output of Mineral ... ..	190, 191		
" " " Persons employed ... ..	55, 56, 191		
Lancashire and Yorkshire Railway, Coal and Coke carried ... ..	196		
Lead obtainable from British ores ... ..	147, 249-252		
" " imported foreign ores ... ..	257		
" Prices of, in the London market ... ..	253, 254		
" Quantity available for home consumption ... ..	257		
" Smelters in United Kingdom ... ..	258, 259		
" and lead ore, Exported ... ..	254-257		
		Leitrim Co., Coal ... ..	170, 189, 192
		" Sandstone ... ..	171, 276
		" Coal traffic ... ..	198
		" Persons employed ... ..	58, 67, 171
		Liberia, Mineral wealth ... ..	445
		Lidgett Colliery Accident ... ..	92
		Lignite ( <i>see</i> Brown coal).	
		Limerick Co., Gravel and sand ... ..	170, 221
		" Igneous rocks ... ..	170, 223
		" Limestone ... ..	171, 261
		" Sandstone ... ..	171, 276
		" Persons employed ... ..	67, 171

## L.

LABUAN, Output of coal ... ..	331
Lanarkshire, Clay ... ..	168, 184
" Coal ... ..	168, 189, 192
" Gravel and sand ... ..	168, 220
" Igneous rocks ... ..	168, 223
" Iron ore ... ..	168, 226, 227
" Lead ore ... ..	169, 249, 252
" Limestone ... ..	169, 261
" Oil shale ... ..	169, 266
" Sandstone ... ..	169, 276
" Silver ... ..	249, 252
" Blast furnaces ... ..	235, 242
" Coal traffic ... ..	198, 200
" Death-rate from accidents ... ..	99
" Persons employed ... ..	57, 63, 66, 99, 169
" Zinc smelters ... ..	297
Lancashire, Clay ... ..	166, 184
" Coal ... ..	166, 188, 192
" Copper ore ... ..	166, 208, 209
" Gravel and sand ... ..	166, 220
" Igneous rocks ... ..	166, 222
" Iron ore ... ..	166, 226, 228, 230
" Iron pyrites ... ..	166, 246
" Limestone ... ..	167, 260
" Salt ... ..	167, 272
" Sandstone ... ..	167, 275
" Slate ... ..	167, 279, 280
" Blast furnaces ... ..	235, 238
" Coal traffic ... ..	196, 197, 199
" Copper smelters ... ..	216
" Death-rate from accidents ... ..	99
" Lead smelters ... ..	258
" Persons employed ... ..	57, 59, 62, 65, 99, 167
" Zinc smelters ... ..	297
Lancashire and Cheshire Coal-fields, Counties ... ..	54
" " " Fatal Accidents ... ..	95-98
" " " Output of Mineral ... ..	190, 191
" " " Persons employed ... ..	55, 56, 191
Lancashire and Yorkshire Railway, Coal and Coke carried ... ..	196
Lead obtainable from British ores ... ..	147, 249-252
" " imported foreign ores ... ..	257
" Prices of, in the London market ... ..	253, 254
" Quantity available for home consumption ... ..	257
" Smelters in United Kingdom ... ..	258, 259
" and lead ore, Exported ... ..	254-257

Iron or Iron ore, Output of— <i>cont.</i>		Page.
	Newfoundland ... ..	309, 361
	New South Wales ... ..	309, 319
	New Zealand ... ..	309, 363
	Norway ... ..	309, 450
	Nova Scotia ... ..	341
	Ontario ... ..	342
	Portugal ... ..	309, 456
	Prussia ... ..	427
	Quebec... ..	313
	Queensland ... ..	322
	Russia ... ..	309, 462
	Saxony ... ..	432
	South Australia ... ..	324
	Spain ... ..	309, 469
	Sweden ... ..	309, 472
	Tasmania ... ..	325, 326
	United States... ..	309, 484
	Western Australia ... ..	329
Iron ore, Exported ... ..		233, 234
" Imported ... ..		232-234
" Diagram showing output and import, 1873-1904 ... ..		225
" Fatal Accidents at Iron Mines ... ..		72
" Output from Coal Mines ... ..		225, 226
" " " Mines under the Coal Mines Act 10, 15, 227		
" " " " Metalliferous Mines Act 10, 17, 228-230		
" " " Iron Mines ... ..		225, 226
" " " Quarries ... ..		19, 224-226, 231
" " Open workings ... ..		21, 231
" " in each County ... ..		166, 168, 170, 226
" " from the several Coal-fields ... ..		190
" Persons employed at Iron Mines ... ..		54, 58-60
" Quantity available for the blast furnaces ... ..		234
" " smelted in United Kingdom 235, 237-242		
" Quarries, Accidents ... ..		102, 103
" " Persons employed ... ..		64
" Micaceous ... ..		265
Iron oxide, Production of Australia ... ..		317
" " New South Wales ... ..		319
Iron, Pig, Exported ... ..		243-245
" " Prices per ton in different districts ... ..		243, 244
" " Output of the blast furnaces ... ..		235-243
" " Quantity available for home consumption ... ..		243
" " " obtainable from British ores 147, 224		
Iron pyrites, Imported ... ..		247
" Countries whence exported ... ..		247
" Output of :		
" United Kingdom ... ..		10, 41, 147, 246, 314
" Bavaria ... ..		426
" Belgium ... ..		394
" Bosnia and Herzegovina ... ..		390
" Canada ... ..		338
" France ... ..		413
" German Empire ... ..		419
" Hungary ... ..		388
" Italy ... ..		441
" Japan ... ..		444
" Newfoundland ... ..		361
" Norway ... ..		450
" Ontario ... ..		342
" Portugal ... ..		456
" Prussia ... ..		427
" Russia ... ..		462
" Saxony ... ..		432
" Spain ... ..		469
" Sweden ... ..		472
" Turkey ... ..		478
" United States ... ..		483
Iron vitriol, Production of :		
" Austria ... ..		382
" German Empire ... ..		420
" Hungary ... ..		388
" Japan ... ..		444
" Prussia ... ..		422

					Page
Eruptions of water, Accidents	...	...	...	...	22, 23, 85, 88-90
Isle of Man, Clay	...	...	...	...	170, 185
" Copper ore	...	...	...	...	209
" Fuller's earth	...	...	...	...	185
" Gravel and sand	...	...	...	...	170, 221
" Igneous rocks	...	...	...	...	170, 223
" Lead ore	...	...	...	...	171, 249, 252
" Limestone	...	...	...	...	171, 261
" Salt	...	...	...	...	171, 271, 272
" Sandstone	...	...	...	...	171, 276
" Silver	...	...	...	...	249, 252
" Slate	...	...	...	...	171, 279
" Zinc ore	...	...	...	...	171, 292, 294
" Summary of the Mineral output	...	...	...	...	149
" Persons employed	...	...	...	...	60, 63, 67, 171
Isle of Wight ( <i>included with Hampshire</i> ).					
Italy, Accidents	...	...	...	...	310, 441, 442
" Mineral output	...	...	...	...	309, 441
" Persons employed	...	...	...	...	303, 439, 440
Ivory Coast, Mineral Output	...	...	...	...	412
" Persons employed	...	...	...	...	444

## J.

JADESTONE, Output of India	...	...	...	...	356
Japan, Accidents	...	...	...	...	310, 445
„ Mineral output	...	...	...	...	309, 444
„ Persons employed	...	...	...	...	308, 443
Java, Mineral output	...	...	...	...	407
Jet, Output of :					
United Kingdom	...	...	...	...	248
Cochin China	...	...	...	...	437
Spain	...	...	...	...	469
Johore, Mineral deposits	...	...	...	...	445

K.

<b>KAINITE, Output of :</b>						
German Empire...	...	...	...	...	...	<b>419</b>
Prussia ...	...	...	...	...	...	<b>427</b>
Kansas, Accidents at Coal Mines ...	...	...	...	...	...	<b>485</b>
" Persons employed ...	...	...	...	...	...	<b>482</b>
" Coal-cutting machines ...	...	...	...	...	...	<b>479</b>
Kauri gum, Production of New Zealand ...	...	...	...	...	...	<b>363</b>
Kent, Chalk ...	...	...	...	...	...	<b>166, 182</b>
" Chert and flint ...	...	...	...	...	...	<b>166, 183</b>
" Clay ..	...	...	...	...	...	<b>166, 184</b>
" Gravel and sand ...	...	...	...	...	...	<b>166, 220</b>
" Limestone ...	...	...	...	...	...	<b>167, 260</b>
" Sandstone ...	...	...	...	...	...	<b>167, 275</b>
" Persons employed ...	...	...	...	...	57, 62, 65,	<b>167</b>
Kentucky, Accidents at Coal Mines ...	...	...	...	...	...	<b>485</b>
" Persons employed ...	...	...	...	...	...	<b>482</b>
" Coal-cutting machines ...	...	...	...	...	...	<b>479, 480</b>
Kerry Co., Gravel and sand ...	...	...	...	...	...	<b>170, 221</b>
" Limestone ...	...	...	...	...	...	<b>171, 261</b>
" Persons employed ...	...	...	...	...	...	<b>67, 171</b>
Kildare Co., Gravel and sand ...	...	...	...	...	...	<b>170, 221</b>
" Limestone ...	...	...	...	...	...	<b>171, 261</b>
" Persons employed ...	...	...	...	...	...	<b>67, 171</b>
Kilkenny Co., Coal ...	...	...	...	...	170, 189, 190, 192	
" Gravel and sand ...	...	...	...	...	...	<b>170, 221</b>
" Limestone ...	...	...	...	...	...	<b>171, 261</b>
" Sandstone ...	...	...	...	...	...	<b>171, 276</b>

	Page.
Kilkenny Co., Slate ... ..	171, 279
" Coal traffic ... ..	198, 200
" Persons employed ... ..	58, 67, 171
Kimberley Diamond Mines, Accidents at ...	345-347
" " Persons employed at ...	344, 345
Kincardine, Gravel and sand ... ..	168, 220
" Igneous rocks ... ..	168, 223
" Sandstone ... ..	169, 276
" Persons employed ... ..	66, 169
King's County, Bog ore ... ..	171
" Gravel and sand ... ..	170, 221
" Limestone ... ..	171, 261
" Sandstone ... ..	171, 276
" Persons employed ... ..	67, 171
Kinross, Clay ... ..	168, 184
" Coal ... ..	168, 189, 192
" Igneous rocks ... ..	168, 223
" Persons employed ... ..	57, 66, 169
Kirkcudbright, Igneous rocks ... ..	168, 223
" Persons employed ... ..	66, 169

## L.

LABUAN, Output of coal ... ..	331
Lanarkshire, Clay ... ..	168, 184
" Coal ... ..	168, 189, 192
" Gravel and sand ... ..	168, 220
" Igneous rocks ... ..	168, 223
" Iron ore ... ..	168, 226, 227
" Lead ore ... ..	169, 249, 252
" Limestone ... ..	169, 261
" Oil shale ... ..	169, 266
" Sandstone ... ..	169, 276
" Silver ... ..	249, 252
" Blast furnaces ... ..	235, 242
" Coal traffic ... ..	198, 200
" Death-rate from accidents ... ..	99
" Persons employed ... ..	57, 63, 66, 99, 169
" Zinc smelters ... ..	297
Lancashire, Clay ... ..	166, 184
" Coal ... ..	166, 188, 192
" Copper ore ... ..	166, 208, 209
" Gravel and sand ... ..	166, 220
" Igneous rocks ... ..	166, 223
" Iron ore ... ..	166, 226, 228, 230
" Iron pyrites ... ..	166, 246
" Limestone ... ..	167, 260
" Salt ... ..	167, 272
" Sandstone ... ..	167, 275
" Slate ... ..	167, 279, 280
" Blast furnaces ... ..	235, 238
" Coal traffic ... ..	198, 197, 199
" Copper smelters ... ..	216
" Death-rate from accidents ... ..	99
" Lead smelters ... ..	258
" Persons employed ... ..	57, 59, 62, 65, 99, 167
" Zinc smelters ... ..	297
Lancashire and Cheshire Coal-fields, Counties ...	54
" " " Fatal Accidents ...	95-98
" " " Output of Mineral ...	190, 191
" " " Persons employed ...	55, 56, 191
Lancashire and Yorkshire Railway, Coal and Coke carried ... ..	196
Lead obtainable from British ores ... ..	147, 249-252
" " imported foreign ores ... ..	257
" Prices of, in the London market ... ..	253, 254
" Quantity available for home consumption ...	257
" Smelters in United Kingdom ... ..	258, 259
" and lead ore, Exported ... ..	254-257

Lead and lead ore, Imported ... ..	256, 257
Lead and lead ore, Output of:	
United Kingdom ... ..	10, 41, 147, 249-253, 309, 314, 315
Algeria ... ..	309, 376
Australia ... ..	309, 317
Austria ... ..	309, 383
Belgium ... ..	309, 394
Bolivia ... ..	309, 396
British Columbia ... ..	339
Canada ... ..	309, 338
Chili ... ..	309, 401
China ... ..	309, 402
France ... ..	309, 413
German Empire ... ..	309, 419
Greece ... ..	309, 434
Honduras ... ..	309, 437
Hungary ... ..	309, 388
Italy ... ..	309, 441
Japan ... ..	309, 444
Mexico ... ..	309, 447
New Caledonia ... ..	309, 449
New South Wales ... ..	319
Norway ... ..	450
Ontario ... ..	342
Peru ... ..	309, 453
Portugal ... ..	309, 456
Prussia ... ..	437
Quebec ... ..	343
Queensland ... ..	323
Rhodesia ... ..	309, 367
Russia ... ..	309, 463
Servia ... ..	309, 465
South Australia ... ..	324
Spain ... ..	309, 469
Sweden ... ..	309, 472
Tasmania ... ..	309, 396
Tunis ... ..	309, 476
Turkey ... ..	309, 478
United States ... ..	309, 484
Lead poisoning cases at Broken Hill Mines (New South Wales) ... ..	321
Leeds and Liverpool Canal Co. Coal traffic ... ..	199
Leeward Islands ( <i>see</i> Redonda).	
Legislation relating to Mines in:	
United Kingdom ... ..	131
Mexico ... ..	447
New South Wales ... ..	321
New Zealand ... ..	364
Orange River Colony ... ..	366
South Australia ... ..	324
Transvaal ... ..	363, 371
Victoria ... ..	327, 328
Western Australia ... ..	329, 330
Leicestershire, Clay ... ..	166, 184
" Coal ... ..	166, 188, 192
" Gravel and sand ... ..	166, 220
" Igneous rocks ... ..	166, 222
" Iron ore ... ..	166, 226, 231
" Limestone ... ..	167, 260
" Slate ... ..	167, 279
" Blast furnaces ... ..	235, 238
" Coal traffic ... ..	197
" Death-rate from Accidents ... ..	99
" Persons employed ... ..	57, 62, 65, 99, 167
Leitrim Co., Coal ... ..	170, 189, 192
" Sandstone ... ..	171, 276
" Coal traffic ... ..	198
" Persons employed ... ..	58, 67, 171
Liberia, Mineral wealth ... ..	445
Lidgett Colliery Accident ... ..	92
Lignite ( <i>see</i> Brown coal).	
Limerick Co., Gravel and sand ... ..	170, 221
" Igneous rocks ... ..	170, 223
" Limestone ... ..	171, 261
" Sandstone ... ..	171, 276
" Persons employed ... ..	67, 171



	Page.
Lime or limestone :	
Output of United Kingdom ...	10, 41, 147, 260, 261, 314
Algeria ...	376
Australia ...	317
Bavaria ...	426
Belgium ...	394
Canada ...	338
Cuba ...	405
France ...	413, 414
Iceland ...	406
Japan ...	444
Malta ...	359
Natal ...	360
Newfoundland ...	361
New South Wales ...	320
Nova Scotia ...	341
Ontario ...	342
Queensland ...	322
Saxony ...	432
South Australia ...	324
Switzerland ...	474
Trinidad ...	372
Tunis ...	476
United States ...	483
Western Australia ...	329
Limestone Quarries, Accidents ...	102, 103
" " Persons employed ...	64
Lincolnshire, Chalk ...	166, 182
" Clay ...	166, 184
" Gravel and sand ...	166, 220
" Iron ore ...	166, 226, 227, 231
" Limestone ...	167, 260
" Sandstone ...	167, 275
" Blast furnaces ...	235, 238
" Persons employed ...	59, 65, 167
Linlithgowshire, Clay ...	168, 184
" Coal ...	168, 189, 192
" Gravel and sand ...	168, 220
" Igneous rocks ...	168, 223
" Iron ore ...	168, 226, 227
" Oil shale ...	169, 266
" Sandstone ...	169, 276
" Coal traffic ...	193
" Death-rate from Accidents ...	99
" Persons employed ...	57, 63, 66, 99, 169
Lithium, Output of United States ...	483
Lithographic stone, Output of :	
Bavaria ...	426
France ...	414
Locks of Safety Lamps ...	120
London and North Western Railway, Coal carried ...	197
" " Salt conveyed ...	273
London Co., Lead smelters ...	258
Londonderry Co., Igneous rocks ...	170, 223
" Limestone ...	171, 261
" Sandstone ...	171, 276
" Persons employed ...	60, 67, 171
Longford Co., Gravel and sand ...	170, 221
" Limestone ...	171, 261
" Persons employed ...	67, 171
Louth Co., Gravel and sand ...	170, 221
" Igneous rocks ...	170, 223
" Limestone ...	171, 261
" Persons employed ...	67, 171
Lunt's Colliery Accident ...	83
Lynch Colliery Accident ...	89
Luxemburg (G. Duchy), Output of iron ore ...	309, 420
" Persons employed ...	308, 418

## M.

MACHINERY, Accidents by, at Mines	22-25, 28-31, 85, 91, 93, 94
" " Quarries	26, 27, 32, 33, 104, 108, 109
" Coal mined in the United States by	479
Madagascar, Mineral wealth and export of gold	309, 445, 446
" Persons employed	308, 446
Magnesite, Production of :	
Greece	434
India	356
United States	483
Magnesium carbonate, Output of Spain	469
" chloride, Production of :	
German Empire	420
Prussia	428
" salts, Production of :	
German Empire	419, 420
Prussia	427
" sulphate, Production of :	
German Empire	420
Prussia	428
Malay States ( <i>see</i> Federated Malay States).	
Malta, Limestone exported from	359
Managers' Certificates, List of persons to whom granted in 1904	124-127
Manchester Ship Canal Co., Salt conveyed	273
Manganese ore, Imported	263
" " Output of :	
United Kingdom	10, 41, 147, 262, 263, 314
Australia	317
Austria	382
Belgium	394
Bosnia and Herzegovina	390
Brazil	398
Canada	338
Chili	401
Cuba	405
Dutch East Indies	407
France	413
German Empire	420
Greece	434
Hungary	388
India	356
Italy	441
Japan	444
Java	407
New South Wales	320
New Zealand	363
Norway	450
Nova Scotia	341
Portugal	456
Prussia	427
Queensland	322
Russia	462
Saxony	432
South Australia	324
Spain	469
Sweden	472
Turkey	478
United States	483
Manjak, Output of Barbados	330
" " Trinidad	372
Map of British Isles, shewing Inspection districts	48
Marble, Output of :	
Algeria	376
Belgium	394
France	414
Greece	433
Mexico	447
Marl, Output of :	
United Kingdom ( <i>included with "Clay"</i> ).	
Bavaria	426

	Page.		Page.
<b>Marl, Output of—cont.</b>		<b>Mineral output, County summary, all Mines, Quarries, &amp;c.</b>	166-171
France ... ..	414	<b>Mineral paints, Output of United States ...</b>	483
United States ... ..	483	<b>Mineral waters, Output of :</b>	
<b>Maryland, Accidents at Coal Mines</b>	486	Canada ... ..	338
" Persons employed ... ..	482	Italy ... ..	441
" Coal-cutting machines... ..	480	Spain ... ..	469
<b>Maryport and Carlisle Railway Coal and Coke traffic</b>	197	United States ... ..	483
<b>Matches or smoking, Explosions of fire-damp caused by</b>	74, 75	<b>Minnesota, Output of Iron Ore ...</b>	485
<b>Mayo Co., Bog ore ... ..</b>	171	<b>Mines and Quarries, Inspection districts ...</b>	46, 47
" Limestone... ..	171, 261	<b>Miscellaneous fatal accidents at Mines ...</b>	22-25, 35, 73, 84-93, 95
" Persons employed ... ..	67, 171	" Quarries 26, 27, 104, 105, 108, 109	
<b>Meath Co., Gravel and sand ... ..</b>	170, 221	" non-fatal accidents at Mines ...	28-31
" Igneous rocks ... ..	170, 223	" " " Quarries ...	32, 33
" Limestone ... ..	171, 261	<b>Missouri, Accidents at Coal Mines ...</b>	486
" Persons employed ... ..	67, 171	" " " Ore ...	487
<b>Mechanical Coal-cutters, number in use in United Kingdom, and coal got by ...</b>	115, 116	" Persons employed ... ..	482
" " " United States ...	479, 480	" Coal-cutting machines ... ..	480
<b>Melaphyre, Output of Bavaria ... ..</b>	426	<b>Molybdenite, Output of Australia... ..</b>	317
<b>Melgund Colliery Accident...</b>	88	" " " Natal ... ..	360
<b>Mercury (see Quicksilver).</b>		" " " New South Wales ... ..	330
<b>Merionethshire, Clay... ..</b>	168, 184	" " " Norway ... ..	450
" Gold ... ..	169, 218	" " " Ontario ... ..	342
" Igneous rocks ... ..	168, 222	" " " Queensland ... ..	322
" Limestone ... ..	169, 260	" " " South Australia ... ..	324
" Manganese ore ... ..	169, 262	<b>Monaghan Co., Limestone ... ..</b>	171, 261
" Sandstone ... ..	169, 275	" Persons employed ... ..	67, 171
" Slate ... ..	169, 279, 281	<b>Monasite, Output of :</b>	
" Death-rate from accidents ... ..	99	Brazil ... ..	398
" Persons employed ... ..	63, 66, 99, 169	United States ... ..	483
<b>Mexico, Accidents ... ..</b>	310, 447	<b>Monkland Canal, Coal and Coke traffic ...</b>	200
" Mineral output ... ..	309, 447	<b>Monmouthshire, Clay ... ..</b>	166, 184
" Persons employed ... ..	308, 446	" Coal ... ..	166, 188, 192
" Legislation ... ..	447	" Gravel and sand ... ..	166, 220
<b>Mica, Output of :</b>		" Iron ore ... ..	166, 226, 227
United Kingdom ... ..	10, 147, 264, 314	" Limestone... ..	167, 260
Canada ... ..	338	" Sandstone... ..	167, 275
Ceylon ... ..	348	" Blast furnaces ... ..	235, 238
India ... ..	356	" Coal traffic ... ..	196
Natal ... ..	360	" Death-rate from accidents ... ..	99
Ontario ... ..	342	" Persons employed ... ..	57, 62, 65, 99, 167
Quebec ... ..	343	<b>Montana, Accidents at Coal Mines ...</b>	486
Saxony ... ..	432	" " " Ore ... ..	487
United States ... ..	483	" Persons employed ... ..	482
<b>Micaceous Iron ... ..</b>	265	" Coal-cutting machines ... ..	479, 480
<b>Michigan, Accidents at Coal Mines</b>	486	<b>Montgomeryshire, Barytes ... ..</b>	168, 177, 179
" Output of Iron Ore ... ..	485	" Clay ... ..	168, 184
" Persons employed ... ..	482	" Igneous rocks ... ..	168, 222
" Coal-cutting machines ... ..	480	" Lead ore... ..	169, 249, 252
<b>Middlesex, Chalk ... ..</b>	166, 182	" Limestone ... ..	169, 260
" Chert and flint ... ..	166, 183	" Sandstone ... ..	169, 275
" Clay ... ..	166, 184	" Silver ... ..	249, 252
" Gravel and sand ... ..	166, 220	" Slate ... ..	169, 279, 282
" Lead smelters ... ..	258	" Zinc ore... ..	169, 292, 294
" Persons employed ... ..	65, 167	" Persons employed ... ..	63, 66, 169
<b>Midland coal-fields, Counties ... ..</b>	54	<b>Morocco, Mineral workings of ... ..</b>	448
" Fatal accidents ... ..	95-99	<b>Mysore Gold Mines, Accidents ... ..</b>	359
" Output of Minerals ... ..	190, 191	" " " Persons employed ... ..	359
" Persons employed ... ..	55, 56, 191		
<b>Midland Railway Coal and Coke traffic ...</b>	197		
<b>Millstones, Output of :</b>			
France ... ..	414		
Greece ... ..	434		
Servia ... ..	465		
United States ... ..	483		
<b>Mine, Definition of ... ..</b>	5		
<b>Mineral oil (see Petroleum).</b>			
<b>Mineral output of the several Coal-fields...</b>	190, 191		
" " per person employed ... ..	191		
<b>Mineral output of :</b>			
United Kingdom, summary ... ..	10, 147-149, 314		
British Empire, summary ... ..	309		
Foreign Countries, summary ... ..	309		
Mines in each county ... ..	150-157		
Quarries in each county ... ..	158-163		
Shallow workings, &c., in each county ...	164, 165		

## N.

<b>NAIRN, Igneous rocks ... ..</b>	168, 223
" Sandstone ... ..	169, 276
" Persons employed .. ..	66, 169
<b>Naked lights, Explosions of fire-damp caused by</b>	74-78
<b>Naphtha (see Petroleum).</b>	
<b>Natal, Accidents ... ..</b>	310, 360
" Mineral output ... ..	309, 360
" Persons employed ... ..	308, 360





	Page.
Output of Minerals from Mines in each inspection district under the Coal Mines Act ...	14, 15
Do. do. per Person employed ...	14, 15
Output of Minerals from Mines in each inspection district under the Metalliferous Mines Act ...	16, 17
Output of Minerals from Quarries in each inspection district under the Quarries Act ...	18, 19
Output of Minerals from certain shallow workings ...	20, 21
Output of Minerals from each county under the Coal Mines Act... ..	150-153
Output of Minerals from each county under the Metalliferous Mines Act ... ..	154-157
Output of Minerals from each county under the Quarries Act ... ..	158-163
Output of Minerals from shallow workings, brine wells, &c. ... ..	164, 165
Output of Minerals from the several Coal-fields ...	190, 191
" " from Mines, 1873 to 1904 ...	39
" " from Mines and Quarries, 1873 to 1904... ..	40, 41
" " in United Kingdom, General Summary ... ..	10, 147
Output of Minerals in British Colonies ... ..	309
" " in Foreign Countries ... ..	309
" " (see also under each Colony and Country, and under each Mineral).	
Overwinding, Accidents from ... ..	28, 29
Oxfordshire, Chalk ... ..	166, 182
" Chert and flint ... ..	166, 183
" Clay ... ..	166, 184
" Gravel and sand ... ..	166, 220
" Iron ore ... ..	166, 226, 231
" Limestone ... ..	167, 260
" Sandstone ... ..	167, 275
" Persons employed ... ..	62, 65, 167
Osokerite, Output of Austria ... ..	383

## P.

PAHANG, Mineral output ... ..	351
Palladium, Output of Ontario ... ..	342
Panama, Mineral Output ... ..	309, 451
Paraguay, Mineral deposits of ... ..	451
Patent fuel, Exported ... ..	193, 205-207
" Shipped coastwise ... ..	201-203, 207
Paving stone, Output of :	
Bavaria ... ..	426
Belgium ... ..	394
France ... ..	414
Newfoundland ... ..	361
Tunis ... ..	476
Pert, Output of :	
Canada ... ..	338
France ... ..	413
Holland ... ..	435
Italy ... ..	441
Japan ... ..	444
Ontario ... ..	342
Peebles, Coal ... ..	168, 189, 192
" Igneous rocks ... ..	168, 223
" Limestone ... ..	169, 261
" Sandstone ... ..	169, 276
" Persons employed ... ..	57, 66, 169
Pembroke, Chert and flint ... ..	168, 183
" Coal ... ..	168, 189, 190, 192
" Igneous rocks ... ..	168, 222
" Limestone ... ..	169, 260
" Sandstone ... ..	169, 275
" Slate ... ..	169, 279
" Persons employed ... ..	57, 66, 169
Pennsylvania, Accidents ... ..	486

	Page
Pennsylvania, Output of Coal ... ..	481, 484
" Persons employed ... ..	482
" Coal-cutting machines ... ..	479, 480
Perak, Output of Tin ... ..	353
Permitted Explosives, Accidents caused by ... ..	78
Permitite, Accidents with ... ..	86
Persia, Minerals obtained in ... ..	451
Persons employed in inspection districts under the Coal Mines Act ... ..	11
Persons employed in inspection districts under the Metalliferous Mines Act ... ..	12
Persons employed in inspection districts under the Quarries Act ... ..	13
Persons employed in each county under the Coal Mines Act ... ..	151, 153
Persons employed in each county under the Metalliferous Mines Act ... ..	155, 157
Persons employed in each county under the Quarries Act ... ..	65-67, 159, 161, 163
Persons employed in the several Coal-fields ... ..	55, 56, 191
" " at Coal Mines ... ..	54-58, 192
" " Iron Mines ... ..	54, 58-60
" " "other" Mines ... ..	54, 60-63
" " different kinds of Quarries ... ..	64
" " Mines, 1873 to 1904 ... ..	38
Persons employed at Mines and Quarries in United Kingdom, Summary ... ..	6, 9, 53, 171, 308, 313
" " Mines and Quarries in British Colonies, Summary of ... ..	308
" " Mines and Quarries in Foreign Countries, Summary of ... ..	308
Persons employed in Mining in :	
Algeria ... ..	308, 375
Australia ... ..	308, 316
Austria ... ..	308, 380, 381
Bahamas ... ..	308, 330
Banca ... ..	406
Bavaria ... ..	425
Belgium ... ..	308, 391, 392
Billiton ... ..	406
Bohemia ... ..	386
Bosnia and Herzegovina ... ..	308, 369
British Borneo ... ..	308, 331
British Columbia ... ..	339
British Guiana... ..	308, 333
British New Guinea ... ..	334
Bulgaria ... ..	308, 398
Canada ... ..	308, 339-341, 343
Cape Colony ... ..	308, 344
Ceylon ... ..	308, 348
Chili ... ..	308, 401
Corea ... ..	308, 404
Dutch East Indies ... ..	308, 406, 408
Federated Malay States ... ..	308, 351
France ... ..	308, 412
German Empire... ..	308, 418
Gold Coast ... ..	308, 353
Greece ... ..	308, 434
Greenland ... ..	308, 406
Holland ... ..	308, 435
Hungary ... ..	308, 387
India ... ..	308, 355
Indo-China ... ..	308, 437
Italy ... ..	308, 439, 440
Ivory Coast ... ..	308, 442
Japan ... ..	308, 443
Kimberley ... ..	344, 345
Luxemburg ... ..	308, 418
Madagascar ... ..	308, 446
Mexico ... ..	308, 446
Natal ... ..	308, 360
New Caledonia ... ..	308, 448
Newfoundland ... ..	308, 361
New South Wales ... ..	319
New Zealand ... ..	308, 363
Norway ... ..	308, 450



	Page.		Page
<b>Persons employed in Mining in—cont.</b>		<b>Petroleum, Output of—cont.</b>	
Nova Scotia ... ..	340	Dutch East Indies... ..	309, 407, 408
Ontario ... ..	341	German Empire ... ..	309, 419
Orange River Colony ... ..	308, 365	Hungary ... ..	309, 388
Peru ... ..	308, 452	India ... ..	309, 356
Portugal ... ..	308, 455	Italy... ..	309, 441
Prussia ... ..	426	Japan ... ..	309, 444
Quebec ... ..	343	Java... ..	407
Queensland ... ..	322	Newfoundland ... ..	309, 361
Redonda ... ..	308, 366	Ontario ... ..	342
Rhodesia... ..	308, 367	Peru... ..	309, 453
Russia ... ..	308, 461	Prussia ... ..	427
Saxony ... ..	431	Roumania ... ..	309, 458
Servia ... ..	308, 464	Russia ... ..	309, 462
Siam ... ..	308, 466	Sumatra ... ..	408
Singkep ... ..	408	United States ... ..	309, 483
South Australia... ..	324	Philippine Islands, Mineral deposits ... ..	453, 454
Spain ... ..	308, 467, 468	Phosphate of alumina, Output of Redonda ... ..	366
Sumatra ... ..	408	Phosphate of lime, Conveyed by railway... ..	269
Sweden ... ..	308, 471	" " Imported ... ..	269
Switzerland ... ..	308, 473, 474	" " Output of :	
Tasmania... ..	325	United Kingdom 10, 41, 147, 268, 269, 314	
Transvaal ... ..	308, 369	Algeria ... ..	376
Trinidad ... ..	308, 372	Aruba ... ..	409
Tunis ... ..	308, 475	Belgium ... ..	394
United States ... ..	308, 482	Canada ... ..	338
Victoria ... ..	326	Christmas Island ... ..	349
Western Australia ... ..	328	Dutch West Indies ... ..	409
<b>Persons employed at Petroleum Wells :</b>		France ... ..	414
Austria ... ..	381	French Guiana ... ..	416
Ontario ... ..	341	Porto Rico ... ..	454
Russia ... ..	461	Quebec ... ..	343
<b>Persons employed at Quarries :</b>		Tunis ... ..	476
Algeria ... ..	375	United States ... ..	483
Belgium ... ..	391	Phosphoric Ore, Output of Japan ... ..	444
British Guiana ... ..	333	" " " Russia ... ..	462
Ceylon ... ..	348	" " " Spain ... ..	469
Channel Islands... ..	349	Pig iron ( <i>see</i> Iron, Pig).	
France ... ..	413	Pilsley Colliery Accident ... ..	95
German Empire ... ..	424	Platinum, Output of :	
India ... ..	355	Australia... ..	317
Italy ... ..	439	New South Wales ... ..	320
Newfoundland ... ..	361	Ontario ... ..	342
Peru ... ..	452	Russia ... ..	462
Portugal ... ..	455	United States ... ..	484
Russia ... ..	461	Plumbago ( <i>see</i> Graphite).	
Servia ... ..	464	Porcelain earth, Output of Bavaria ... ..	426
South Australia ... ..	324	Porphry, Output of Australia ... ..	317
Sweden ... ..	471	" " Queensland ... ..	322
Switzerland ... ..	473, 474	Porto Rico, Mineral deposits ... ..	454
Trinidad ... ..	372	Portugal, Accidents ... ..	310, 456
<b>Persons employed at Salt Works :</b>		" Mineral output ... ..	309, 455, 456
Austria ... ..	381	" Persons employed ... ..	308, 457
Bosnia and Herzegovina ... ..	389	Portuguese East Africa, Mineral deposits ... ..	457
German Empire .. ..	419	" Nyassaland, Mineral deposits... ..	457
India ... ..	355	" Potassium, United Kingdom ... ..	270
Italy ... ..	439	Potassium salts, Output of :	
Ontario ... ..	341	German Empire... ..	419, 420
Russia ... ..	461	Prussia ... ..	427, 428
<b>Persons employed at Turbaries :</b>		Potter's clay, Exported ... ..	186
Holland ... ..	435	" Output of :	
Italy ... ..	439	United Kingdom ... ..	184
<b>Perthshire, Gravel and sand ... ..</b>	168, 220	France ... ..	414
" Igneous rocks ... ..	168, 223	Tunis ... ..	476
" Limestone ... ..	169, 261	Pozzolana, Output of Switzerland ... ..	475
" Sandstone ... ..	169, 276	Precious stones, Output of :	
" Slate ... ..	169, 279	Australia... ..	317
" Persons employed ... ..	66, 169	Borneo, Dutch ... ..	407
<b>u, Mineral output ... ..</b>	309, 453	Brasil ... ..	398
<b>Persons employed ... ..</b>	308, 452	British Guiana ... ..	333
<b>Proleum, Imported ... ..</b>	268	Cape Colony ... ..	344
" Output of :		Ceylon ... ..	348
United Kingdom ... ..	267, 314	Colombia... ..	403
Austria ... ..	309, 383	France ... ..	414
Canada ... ..	309, 338		
Dutch Borneo ... ..	407		

	Page.
Precious stones, Output of— <i>cont.</i>	
German East Africa ... ..	416
Mexico ... ..	447
New South Wales ... ..	319, 320
Orange River Colony ... ..	365
Persia ... ..	451
Queensland ... ..	322
Siam ... ..	466
Spain ... ..	469
Transvaal ... ..	369
United States ... ..	483
Prices of sea-borne Coal in the London market...	194, 195
" Coal at the pit's mouth ... ..	188, 189, 191, 192, 195
" " at various shipping ports ... ..	195
" " Diagram shewing fluctuations from 1873	
to 1904 ... ..	298
" Pig iron at the works ... ..	243, 244
" Antimony in London market ... ..	173
" Copper " " ... ..	210, 211
" Lead " " ... ..	253, 254
" Standard silver " " ... ..	278
" Tin " " ... ..	287
" Zinc " " ... ..	296, 297
" Cleveland Pig, Copper, Lead, Tin, and Zinc;	
Diagrams shewing fluctuations from 1873	
to 1904... ..	298
Prosecutions under the Boiler Explosions Acts...	111
" " Cruelty to Animals Act ... ..	111
" " Education (Scotland) Act, 1901 ... ..	111
" " Factory and Workshop Acts ... ..	114
" " Mines Act ... ..	110-113
" " Quarries Act ... ..	113, 114
(See also <i>Appeals</i> ).	
Prussia, Accidents ... ..	428-431
" Mineral output ... ..	427, 428
" Persons employed ... ..	426
Pumice Stone, Output of Canary Islands ... ..	399
" " Spain ... ..	469
" " United States ... ..	483
Pyrites ( <i>see</i> Arsenical pyrites, Copper ore, and Iron pyrites).	

## Q.

QUARRIES, Death-rate from accidents ... ..	8, 34, 101, 102
" Fatal accidents... ..	7, 9, 26, 27, 100-110
( <i>See also under</i> Accidents.)	
" Fatal accidents at different kinds of ... ..	102, 103
" Non-fatal accidents ... ..	32, 33
" Prosecutions of Owners and Workmen ... ..	113, 114
" Suggestions for preventing accidents ... ..	106
" Remarks on laxity in observance of	
regulations... ..	107
" Number at work ... ..	13, 65-67
" Mineral output, summary of... ..	10
" " " in each county ... ..	153-163
" " " " inspection district ... ..	18, 19
" Persons employed, summary of ... ..	6, 9, 64
" " " in each county ... ..	65-67, 159, 161,
163	
" " " in each inspection district ... ..	13
" " " at different kinds of ... ..	64
Quarries, Output of :	
Algeria ... ..	376
Belgium ... ..	394
France ... ..	414
Italy ... ..	441
Russia ... ..	462
Sweden ... ..	472
Switzerland ... ..	474, 475
Quartz, Output of :	
Belgium ... ..	394

	Page.
Quartz, Output of— <i>cont.</i>	
Saxony ... ..	433
United States ... ..	483
Quartzite ( <i>see</i> Sandstone) ... ..	275, 276
Quebec, Accidents ... ..	310, 311, 343
" Mineral output ... ..	343
" Persons employed ... ..	343
Queen's County, Coal ... ..	170, 189, 190, 192
" Gravel and sand... ..	170, 221
" Igneous rocks ... ..	170, 223
" Limestone... ..	171, 261
" Coal traffic ... ..	198
" Persons employed ... ..	58, 67, 171
Queensland, Accidents ... ..	310, 311, 318, 323
" Mineral output ... ..	322
" Persons employed ... ..	316, 322
" Charters Towers Mines Disaster Act ... ..	328
Quicksilver, United Kingdom ... ..	270
" Exported ... ..	271
" Imported ... ..	270
Quicksilver ore, Output of :	
Algeria ... ..	376
Australia... ..	317
Austria ... ..	382
Italy ... ..	441
Japan ... ..	444
New South Wales ... ..	320
Russia ... ..	463
Spain ... ..	469
United States ... ..	484

## R.

RADNORSHIRE, Igneous rocks ... ..	168, 222
" Limestone ... ..	169, 260
" Sandstone ... ..	169, 275
" Persons employed... ..	66, 169
Railway traffic of Coal and Coke ... ..	196-198
Railways, Sidings, and Tramways, Accidents on, at	
Mines ... ..	22-25, 28-31, 93, 95
Railways, Sidings, and Tramways, Accidents on, at	
Quarries ... ..	26, 27, 32, 33, 104, 108-110
Redonda, Output of Phosphate of alumina ... ..	308, 366
" Persons employed ... ..	308, 366
Red oxide of iron, Output of Gloucestershire and	
Somerset ... ..	265
Refiners, Antimony ... ..	173
" Arsenic ... ..	176
Regulus, Exported ... ..	213
" Imported ... ..	214, 215
Renfrewshire, Barytes ... ..	168, 177, 179
" Clay ... ..	168, 184
" Coal ... ..	168, 189, 192
" Gravel and sand ... ..	168, 220
" Igneous rocks ... ..	168, 223
" Iron ore ... ..	168, 226, 227
" Limestone ... ..	169, 261
" Sandstone ... ..	169, 276
" Coal traffic ... ..	198
" Persons employed ... ..	57, 60, 63, 66, 169
Rescue Stations at Mines ... ..	120
Rhodesia, Fatal Accidents ... ..	310, 367
" Mineral output ... ..	309, 367
" Persons employed ... ..	308, 367
Roburite, Accidents with ... ..	78, 86
Rock salt, Carted inland ... ..	273
" Conveyed by railways, &c. ... ..	273
" Exported ... ..	274
" Output of United Kingdom ... ..	10, 272
Roofing slates, Exported ... ..	282, 283
Roof Ripping without Explosives ... ..	131



	Page.
Ropes or chains breaking, Accidents from	22, 23, 28, 29, 32, 33, 83-85
Roscommon Co., Coal	170, 189, 192
"    Sandstone...	171, 276
"    Coal traffic	198
"    Persons employed	58, 67, 171
Ross and Cromarty, Gravel and sand	168, 220
"    Igneous rocks	168, 223
"    Sandstone	169, 276
"    Persons employed	63, 66, 169
Roumania, Mineral output...	309, 458
Roxburgh, Igneous rocks	168, 223
"    Limestone	169, 261
"    Sandstone	169, 276
"    Persons employed	66, 169
Russia, Accidents	310, 463
"    Mineral output	309, 461, 462
"    Persons employed	308, 461
"    Commission re Explosion of Fire-damp...	463
Rutile ( <i>see</i> Titanium).	
Rutland, Iron ore	166, 226, 231
"    Limestone	167, 260
"    Sandstone	167, 275
"    Persons employed	65, 167

## S.

SABA, Sulphur deposits	409
Safety lamps, Accidents caused by	74-76
"    Methods for Looking	120, 121
St. Helen's Colliery Accident	76
St. John's Colliery Accident	76
St. Lucia, Sulphur Mine	367
St. Martin, Salt workings	409
Sahara, Salt deposits	463
Salt, Exported	274
"    Conveyed by railway, canal, &c.	273, 274
"    Rock and white, Output of:	
United Kingdom	10, 41, 147, 272, 309, 314
Abyssinia	309, 375
Aden	309, 316
Algeria	309, 376
Argentine Republic	309, 377
Australia	309, 317
Austria	309, 382
Bahamas	309, 330
Bavaria	426
Bonaire and St. Martin	409
Bosnia and Herzegovina	309, 390
Brazil	309, 398
Canada	309, 338
Cape Colony	309, 344
Ceylon	309, 348
Chili	309, 401
China	309, 402
Cochin China	437
Curaçao	409
Cyprus	309, 350
Dutch West Indies	309, 409
Formosa	309, 411
France	309, 413
German Empire	309, 419-421
Greece	309, 434
Honduras	309, 437
Hungary	309, 388
India	309, 356
Indo China	309, 437
Italy	309, 441
Japan	309, 444
Mexico	309, 447

	Page.
Salt, Rock and white, Output of— <i>cont.</i>	
Ontario	342
Orange River Colony	309, 365
Persia	309, 451
Peru	309, 453
Prussia	427, 428
Roumania	309, 458
Russia	309, 462
South Australia	324
Spain	309, 469
Switzerland	309, 475
Transvaal	309, 369
Tunis	309, 476
Turkey	309, 478
Turks and Caicos Islands	309, 373
United States	309, 483
Venezuela	309, 488
Victoria	327
Western Australia	329
Saltpetre, Output of India	356
Sand and gravel, Output of:	
United Kingdom	10, 40, 147, 220, 221, 314
Algeria	376
Bavaria	426
Belgium	394
Canada	338
France	414
Newfoundland	361
Nova Scotia	341
Tunis	476
United States	483
Sandstone, Output of:	
United Kingdom	10, 41, 147, 275, 276, 314
Australia	317
Bavaria	426
Queensland	322
Sandstone Quarries, Accidents	102, 103
"    Persons employed	64
Sandwich Islands, Mineral Deposits	463
Santo Domingo, Mineral deposits...	463
Sarawak, Mineral output	332
Saxonite, Accidents with	78, 86, 107
Saxony, Accidents	432
"    Mineral output	431, 432
"    Persons employed	431
Scheelite, Output of:	
Australia...	317
New South Wales	320
Queensland	322
Scotch Coal-fields, Counties	54
"    "    Fatal Accidents	95-98
"    "    Output of minerals	190, 191
"    "    Persons employed	55, 56, 191
Scotland, Summary of Mineral output	149
"    Copper smelters	216
"    Explosions from naked lights	77, 78
"    Lead smelters	259
"    Railway and canal traffic of Coal and coke	198, 200
Selangor, Output of Tin	352
Selkirk, Igneous rocks	168, 223
"    Persons employed	66, 169
Senegal, Gold exported	309, 464
Servia, Accidents	310, 465
"    Mineral output	309, 465
"    Persons employed	308, 464
Shaft Accidents	22-25, 28-31, 35, 73, 82-84
"    "    Commission of Inquiry in Cape Colony	84
Shale ( <i>see</i> Oil shale).	
Shelton Colliery Accident	92
Shetland, Limestone...	169, 261
"    Sandstone	169, 276
"    Persons employed	66, 169

	Page.		Page.
Shipments of China clay, and stone ... ..	185	Silver lead ore, Output of— <i>cont.</i>	
" Coal, coke, &c. coastwise ... ..	201-203, 207	Australia... ..	317
Shot-firing, Accidents caused by, in Mines	75-78, 87, 88	Bolivia ... ..	396
" " " Quarries ... ..	106, 107	France ... ..	413
Shropshire, Barytes ... ..	166, 177, 178	Greece ... ..	434
" Clay ... ..	166, 184	Hungary ... ..	387
" Coal ... ..	166, 188, 192	New South Wales ... ..	320
" Gravel and sand ... ..	166, 220	South Australia... ..	334
" Igneous rocks ... ..	166, 232	Spain ... ..	469
" Iron ore... ..	166, 226, 227	Sweden ... ..	472
" Iron pyrites ... ..	166, 246	Tasmania ... ..	326
" Lead ore ... ..	167, 249, 250	Turkey ... ..	478
" Limestone ... ..	167, 260	Singkep, Output of Tin ... ..	408
" Sandstone ... ..	167, 275	" Persons employed... ..	408
" Zinc ore... ..	167, 292, 293	Slate, Output of :	
" Blast furnaces ... ..	235, 239	United Kingdom ... ..	10, 41, 147, 278-282, 314
" Coal traffic ... ..	196, 197, 199	Bavaria ... ..	426
" Death-rate from accidents ... ..	100	Belgium ... ..	394
" Persons employed ... ..	57, 59, 62, 65, 100, 167	Canada ... ..	338
Shropshire Union Canal, Coal and Coke traffic ... ..	199	France ... ..	414
Siam, Mineral output ... ..	309, 466	Newfoundland ... ..	361
" Persons employed ... ..	368, 466	Quebec ... ..	343
Silicon iron ... ..	236	Slate Quarries, Accidents ... ..	102, 103
Silver bullion and specie, Imported and exported, Value		" Persons employed ... ..	64
of ... ..	277	Slates, roofing, Exported ... ..	282, 283
" extractors and refiners ( <i>see</i> Copper and Lead		Sligo Co., Barytes ... ..	170, 177, 179
smelters) ... ..	215, 216, 258, 259	" Bogore ... ..	171
" extracted from imported Pyrites ... ..	248, 277	" Coal ... ..	170, 189, 192
" obtainable from British Lead ore ... ..	249-252	" Limestone... ..	171, 261
" Prices of standard, in London market ... ..	278	" Persons employed ... ..	58, 63, 67, 171
" ore, Imported ... ..	277	Small detached coalfields, Counties	54
Silver or silver ore, Output of :		" " Fatal accidents ... ..	95-98
United Kingdom ... ..	10, 147, 276, 277, 314, 315	" " Output of minerals ... ..	190, 191
Abyssinia ... ..	375	" " Persons employed ... ..	55, 56, 191
Algeria ... ..	376	Smelters, Antimony ... ..	173
Argentine Republic ... ..	378	" Copper ... ..	214, 215
Australia ... ..	309, 317	" Lead ... ..	258, 259
Austria ... ..	309, 382	" Tin ... ..	290
Bolivia ... ..	309, 396	" Zinc... ..	297
British Columbia ... ..	339	Sneyd Colliery Accident ... ..	76
Canada ... ..	309, 338	Soapstone, Output of :	
Chili ... ..	309, 401	United Kingdom ... ..	283
Colombia ... ..	309, 404	Bavaria ... ..	426
Dutch East Indies ... ..	309, 408	France ... ..	414
Ecuador ... ..	309, 409	Spain ... ..	469
France ... ..	309	United States ... ..	483
German Empire... ..	309, 420, 422	Soda ( <i>see</i> Nitrate of soda).	
Honduras ... ..	309, 437	Sodium, Production in United Kingdom... ..	283
Hungary ... ..	309, 388	Sodium sulphate, Output of :	
Italy ... ..	309, 441	German Empire ... ..	420
Japan ... ..	309, 444	Italy ... ..	441
Mexico ... ..	309, 447	Prussia ... ..	428
New South Wales ... ..	320	Russia ... ..	462
New Zealand ... ..	309, 363	Spain ... ..	469
Norway ... ..	309, 450	Somali Coast Protectorate, Mineral deposits	368
Ontario ... ..	342	Somersetshire, Chalk ... ..	166, 182
Peru ... ..	309, 453	" Chert and flint ... ..	166, 183
Prussia ... ..	427	" Clay ... ..	166, 184
Queensland ... ..	322	" Coal ... ..	166, 188, 192
Rhodesia ... ..	309, 367	" Fuller's earth ... ..	184
Russia ... ..	309, 462	" Gravel and sand ... ..	166, 220
Saxony ... ..	432	" Gypsum ... ..	166, 221
Servia ... ..	309, 465	" Igneous rocks ... ..	166, 222
South Australia... ..	324	" Limestone ... ..	167, 260
Spain ... ..	309, 469	" Ochre ... ..	167, 264, 265
Sweden ... ..	309, 472	" Sandstone ... ..	167, 275
Tasmania ... ..	309, 366	" Slate ... ..	167, 279
Transvaal ... ..	309, 484	" Strontium sulphate ... ..	283
United States ... ..	309, 487	" Coal traffic ... ..	196
Uruguay ... ..	309	" Copper smelters ... ..	216
Venezuela ... ..	327	" Death-rate from accidents ... ..	99
Victoria ... ..	329	" Lead smelters ... ..	258
Western Australia		" Tin smelters ... ..	290
Silver lead ore, Output of :		" Persons employed ... ..	57, 62, 65, 99, 167
United Kingdom ... ..	249-252	Soudan, Mineral wealth ... ..	410
Algeria ... ..	376		



	Page.		Page.
South Australia, Mineral output ... ..	324	Suffolk, Chalk ... ..	166, 182
" " Persons employed ... ..	316, 324	" Chert and flint ... ..	166, 183
" " Legislation ... ..	324	" Clay ... ..	166, 184
South Wales Coalfield, Counties ... ..	54	" Gravel and sand ... ..	166, 220
" " Fatal accidents ... ..	95, 99	" Persons employed ... ..	62, 65, 167
" " Mineral output ... ..	190, 191	Sulphate of barium ( <i>see</i> Barium sulphate).	
" " Persons employed ... ..	55, 56, 191	" sodium ( <i>see</i> Sodium sulphate).	
Spain, Accidents ... ..	310, 470	" strontia ( <i>see</i> Strontium sulphate).	
" Mineral output ... ..	309, 468, 469	Sulphur or sulphur ore, Output of :	
" Persons employed ... ..	308, 467, 468	Austria ... ..	382
Special Bulldog powder, Accidents with... ..	78	Chili ... ..	401
Special Rules for Cornwall and Devon Mines ... ..	119	Formosa ... ..	411
" " Electricity ... ..	121, 134-139	France ... ..	413
" " Timbering, Remarks of Inspectors ... ..	80-82	Greece ... ..	434
Spelter ( <i>see</i> Zinc) ... ..	292-297	Hungary ... ..	388
Spiegeleisen ( <i>see</i> Iron) ... ..	236	Italy ... ..	441
Spitzbergen coal deposits ... ..	470	Japan ... ..	444
Staffordshire, Clay ... ..	166, 184	Peru ... ..	453
" Coal ... ..	166, 188, 192	Russia ... ..	462
" Gravel and sand ... ..	166, 220	Spain ... ..	469
" Gypsum ... ..	166, 221	Sweden ... ..	472
" Igneous rocks ... ..	166, 222	United States ... ..	483
" Iron ore ... ..	166, 226, 227, 231	Venezuela ... ..	488
" Iron pyrites ... ..	166, 246	Sumatra, Mineral output ... ..	408
" Limestone ... ..	167, 260	" Persons employed ... ..	408
" Salt ... ..	167, 272	Summaries, County, of Mineral output and persons employed... ..	150-171
" Sandstone ... ..	167, 275	Summary of fatal accidents in Mines and Quarries of the United Kingdom ... ..	7, 9
" Blast furnaces ... ..	235, 239	Summary of fatal accidents in Mines and Quarries of the British Empire ... ..	310
" Coal traffic ... ..	196, 197, 199, 200	Summary of fatal accidents in Mines and Quarries of Foreign countries ... ..	310
" Death-rate from accidents... ..	99	Summary of Metals produced from British ores ... ..	147
" Persons employed ... ..	57, 59, 62, 65, 99, 167	Summary of Mineral output of United Kingdom 6, 7, 10, 147	
Staffordshire and Worcestershire Canal, Coal and Coke traffic ... ..	199	Summary of Mineral output of England, Wales, Scotland, Ireland, and Isle of Man, separately 148, 149	
" " " Salt conveyed ... ..	274	Summary of Mineral and Metal output of British Empire ... ..	309
Standard silver, Prices in the London market ... ..	278	Summary of Mineral and Metal output of Foreign countries ... ..	309
Steatite ( <i>see</i> Soapstone).		Summary of Persons employed in Mines and Quarries of the United Kingdom ... ..	7, 9
Steel, exported ... ..	244, 245	Summary of Persons employed in Mines and Quarries of the British Empire ... ..	308
Stirlingshire, Clay ... ..	168, 184	Summary of Persons employed in Mines and Quarries of Foreign countries ... ..	308
" Coal ... ..	168, 189, 192	Surface, Accidents at Mines on ... ..	22-25, 28-31, 35, 42, 43, 73, 92-95
" Gravel and sand ... ..	168, 220	Surinam ( <i>see</i> Dutch Guiana).	
" Igneous rocks ... ..	168, 223	Surrey, Chalk ... ..	166, 182
" Iron ore ... ..	168, 226, 227	" Chert and flint ... ..	166, 183
" Limestone ... ..	169, 261	" Clay ... ..	166, 184
" Oil shale ... ..	169, 266	" Fuller's earth ... ..	184
" Sandstone ... ..	169, 276	" Gravel and sand ... ..	166, 220
" Blast furnaces ... ..	235, 242	" Limestone ... ..	167, 260
" Coal traffic ... ..	198, 200	" Sandstone ... ..	167, 275
" Death-rate from accidents ... ..	99	" Persons employed ... ..	62, 65, 167
" Persons employed ... ..	57, 63, 66, 99, 169	Sussex, Chalk ... ..	166, 182
Stone, Output of :		" Chert and flint ... ..	166, 183
Algeria ... ..	376	" Clay ... ..	166, 184
Australia... ..	317	" Gravel and sand ... ..	166, 220
Belgium ... ..	394	" Limestone ... ..	167, 260
Canada ... ..	338	" Sandstone ... ..	167, 275
Ceylon ... ..	348	" Persons employed ... ..	62, 65, 167
Channel Islands... ..	349	Sutherland, Clay ... ..	168, 184
France ... ..	414	" Coal ... ..	168, 189, 192
Holland ... ..	436	" Igneous rocks ... ..	168, 223
Japan ... ..	444	" Oil shale ... ..	169, 266
Malta ... ..	359	" Sandstone ... ..	169, 276
Newfoundland ... ..	361	" Persons employed ... ..	57, 66, 169
New South Wales ... ..	320	Swanwick Colliery Accident ... ..	88
Ontario ... ..	342	Sweden, Accidents ... ..	310, 472
Queensland ... ..	322	" Mineral output ... ..	309, 472
Roumania ... ..	458	" Persons employed ... ..	308, 471
Spain ... ..	469		
Tunis ... ..	476		
United States ... ..	483		
Victoria ... ..	327		
Stowite, Accidents with ... ..	75, 76, 78, 86		
Straits Settlements, Mineral output ... ..	368		
Strontium sulphate, Output in United Kingdom ... ..	10, 41, 147, 283, 284, 314		
Suffocation by natural gases, Accidents from ... ..	22, 23, 85, 88		

	Page.
Shipments of China clay, and stone ...	185
" Coal, coke, &c. coastwise ...	201-203, 207
Shot-firing, Accidents caused by, in Mines	75-78, 87, 88
" " " Quarries ...	106, 107
Shropshire, Barytes ...	166, 177, 178
" Clay ...	166, 184
" Coal ...	166, 188, 192
" Gravel and sand ...	166, 220
" Igneous rocks ...	166, 223
" Iron ore... ..	166, 226, 227
" Iron pyrites ...	166, 246
" Lead ore ...	167, 249, 250
" Limestone ...	167, 260
" Sandstone ...	167, 275
" Zinc ore... ..	167, 292, 293
" Blast furnaces ...	235, 239
" Coal traffic ...	196, 197, 199
" Death-rate from accidents ...	100
" Persons employed ...	57, 59, 62, 65, 100, 167
Shropshire Union Canal, Coal and Coke traffic ...	199
Siam, Mineral output ...	309, 466
" Persons employed ...	368, 466
Silicon iron ...	236
Silver bullion and specie, Imported and exported, Value	
of ... ..	277
" extractors and refiners (see Copper and Lead	
smelters)... ..	215, 216, 253, 259
" extracted from imported Pyrites ...	248, 277
" obtainable from British Lead ore ...	249-252
" Prices of standard, in London market ...	278
" ore, Imported... ..	278
Silver or silver ore, Output of :	
United Kingdom ...	10, 147, 276, 277, 314, 315
Abyssinia ...	375
Algeria ...	376
Argentine Republic ...	378
Australia ...	309, 317
Austria ...	309, 383
Bolivia ...	309, 396
British Columbia ...	339
Canada ...	309, 338
Chili ...	309, 401
Colombia ...	309, 404
Dutch East Indies ...	309, 408
Ecuador ...	309, 409
France ...	309
German Empire... ..	309, 420, 422
Honduras ...	309, 437
Hungary ...	309, 388
Italy ...	309, 441
Japan ...	309, 444
Mexico ...	309, 447
New South Wales ...	320
New Zealand ...	309, 363
Norway ...	309, 450
Ontario ...	342
Peru ...	309, 453
Prussia ...	427
Queensland ...	322
Rhodesia ...	309, 367
Russia ...	309, 462
Saxony ...	432
Servia ...	309, 465
South Australia... ..	324
Spain ...	309, 469
Sweden ...	309, 472
Tasmania ...	326
Transvaal ...	309, 369
United States ...	309, 484
Uruguay ...	309, 487
Venezuela ...	309
Victoria ...	327
Western Australia ...	329
Silver lead ore, Output of :	
United Kingdom ...	249-252
Algeria ...	376

	Page.
Silver lead ore, Output of—cont.	
Australia... ..	317
Bolivia ...	396
France ...	413
Greece ...	434
Hungary ...	387
New South Wales ...	330
South Australia... ..	324
Spain ...	469
Sweden ...	472
Tasmania ...	326
Turkey ...	478
Singkep, Output of Tin ...	498
" Persons employed... ..	498
Slate, Output of :	
United Kingdom ...	10, 41, 147, 278-282, 314
Bavaria ...	426
Belgium ...	394
Canada ...	338
France ...	414
Newfoundland ...	361
Quebec ...	343
Slate Quarries, Accidents ...	102, 103
" Persons employed ...	64
Slates, roofing, Exported ...	282, 283
Sligo Co., Barytes ...	170, 177, 178
" Bogore ...	171
" Coal ...	170, 189, 192
" Limestone... ..	171, 261
" Persons employed ...	58, 63, 67, 171
Small detached coalfields, Counties	
" " Fatal accidents ...	95-96
" " Output of minerals ...	190, 191
" " Persons employed ...	55, 56, 191
Smelters, Antimony... ..	170
" Copper ...	214, 215
" Lead ...	263, 264
" Tin ...	290
" Zinc... ..	277
Sneyd Colliery Accident ...	76
Soapstone, Output of :	
United Kingdom ...	283
Bavaria ...	426
France ...	414
Spain ...	469
United States ...	463
Soda (see Nitrate of soda).	
Sodium, Production in United Kingdom... ..	283
Sodium sulphate, Output of :	
German Empire... ..	420
Italy ...	441
Prussia ...	428
Russia ...	462
Spain ...	469
Somali Coast Protectorate, Mineral deposits ...	368
Somersetshire, Chalk ...	166, 182
" Chert and flint ...	166, 183
" Clay ...	166, 184
" Coal ...	166, 188, 192
" Fuller's earth ...	184
" Gravel and sand ...	166, 220
" Gypsum ...	166, 221
" Igneous rocks ...	166, 222
" Limestone ...	167, 260
" Ochre ...	167, 264, 265
" Sandstone ...	167, 275
" Slate ...	167, 279
" Strontium sulphate ...	283
" Coal traffic ...	196
" Copper smelters ...	216
" Death-rate from accidents ...	99
" Lead smelters ...	256
" Tin smelters ...	290
" Persons employed ...	57, 62, 65, 99, 167
Soudan, Mineral wealth ...	410



	Page.
Switzerland, Accidents ... ..	310, 475
" Mineral output ... ..	309, 474, 475
" Persons employed ... ..	308, 473, 474
Syenite ( <i>see</i> Igneous rocks)3 ... ..	222, 223

## T.

TAFF VALE RAILWAY, Coal and Coke traffic ... ..	197
Talc, Output of :	
Canada ... ..	338
France ... ..	414
Newfoundland ... ..	361
Ontario ... ..	342
United States ... ..	483
Tasmania, Accidents ... ..	310, 311, 318, 326
" Mineral output ... ..	325, 326
" Persons employed ... ..	316, 325
Tennessee, Accidents at coal mines ... ..	486
" Persons employed ... ..	482
" Coal-cutting machines ... ..	480
Texas, Persons employed at coal mines ... ..	482
" Coal-cutting machines ... ..	480
Thrybergh Hall Colliery Accident ... ..	92
Timbering, Systematic, Remarks of Inspectors ... ..	80-82
Tin, Average price in the London market ... ..	287
" Exported... ..	289
" Imported ... ..	288
" obtainable from British ore ... ..	147, 284-286
" ore, Output of :	
Cornwall and Devon ... ..	284-286
Dolcoath Mine ... ..	284, 285
" smelters ... ..	290
" standards ... ..	298
" stream works in Cornwall ... ..	286
Tin or tin ore, Output of :	
United Kingdom ... ..	10, 41, 147, 284-286, 309, 314, 315
Australia... ..	309, 317
Austria ... ..	309, 382
Banca and Billiton ... ..	406
Bolivia ... ..	309, 396
China ... ..	309, 402
Dutch East Indies ... ..	309, 406, 408
Federated Malay States ... ..	309, 351, 352
France ... ..	309, 413
German Empire ... ..	309, 420
India ... ..	309, 356
Japan ... ..	309, 444
Mexico ... ..	309
Nigeria ... ..	364
New South Wales ... ..	320
Portugal ... ..	309, 456
Queensland ... ..	322
Russia ... ..	309, 462
Saxony ... ..	432
Siam ... ..	309, 466
Singkep ... ..	408
South Australia... ..	324
Spain ... ..	309, 469
Straits Settlements ... ..	309, 368
Tasmania... ..	326
Victoria ... ..	327
Western Australia ... ..	329
Tipperary Co., Clay ... ..	170, 185
" Coal ... ..	170, 189, 190, 192
" Gravel and sand ... ..	170, 221
" Limestone ... ..	171, 261
" Sandstone ... ..	171, 276
" Slate ... ..	171, 279
" Persons employed ... ..	58, 63, 67, 171

	Page
Thrydail Colliery Accident ... ..	92
Titanium ore or rutile, Output of :	
Norway ... ..	450
United States ... ..	483
Tong-King, Output of coal ... ..	437
Topas, Output of Spain ... ..	469
Trams and tubs, Accidents ... ..	22-25, 28-31, 85, 90, 91
Transvaal, Accidents ... ..	310, 370
" Mineral output ... ..	309, 369
" Gold production, 1895-1904 ... ..	368
" Persons employed ... ..	308, 369
" Legislation ... ..	368, 371
Trent and Mersey Navigation, Coal and Coke traffic ... ..	200
Trinidad, Accidents ... ..	310, 373
" Mineral output ... ..	309, 372
" Persons employed ... ..	308, 372
" Legislation ... ..	373
Tripoli and infusorial earth, Production of :	
Canada ... ..	338
United States ... ..	483
Tungsten ore ( <i>see</i> Wolfram).	
Tunis, Mineral output ... ..	309, 476
Turbaries, France, Output from ... ..	413
" Holland, " ... ..	435
" " Persons employed ... ..	436
" Italy, Output from ... ..	441
" " Persons employed ... ..	439
" Russia ... ..	460
" Sweden ... ..	471
Turkey, Mineral resources and output ... ..	309, 476-478
Turks and Caicos Islands, Output of Salt ... ..	309, 373
Turquoises, Output of Persia ... ..	461
Tyrone Co., Clay ... ..	170, 185
" Coal ... ..	170, 189, 192
" Gravel and sand ... ..	170, 221
" Igneous rocks ... ..	170, 223
" Limestone ... ..	171, 261
" Sandstone ... ..	171, 276
" Persons employed ... ..	58, 67, 171

## U.

UGANDA Protectorate, Mineral resources ... ..	373
Umber, ochre, &c., Output of :	
United Kingdom ... ..	10, 41, 147, 264-266, 314
Cyprus ... ..	350
Saxony ... ..	432
Underground fires at Mines ... ..	22, 23, 28, 29, 75, 85, 88
" haulage accidents ... ..	22-25, 28-31
Under Managers' Certificates, List of persons to whom granted in 1904 ... ..	128-133
Union Canal, Coal and Coke traffic ... ..	200
United States, Accidents ... ..	310, 485-487
" Machine mining ... ..	479, 480
" Mineral output ... ..	309, 483-485
" Persons employed ... ..	308, 482
Uranium ore, Output of :	
United Kingdom ... ..	10, 41, 147, 290, 314
Austria ... ..	382
German Empire ... ..	420
Saxony ... ..	432
United States ... ..	483
Uruguay, Output of gold ... ..	487
Utah, Accidents at Coal Mines ... ..	486
" Persons employed ... ..	482
" Coal-cutting machines ... ..	480

## V.

	Page.
VANADIUM, Output of Spain ... ..	469
" " United States ... ..	483
Venezuela, Mineral Output ... ..	487, 488
Victoria, Accidents ... ..	310, 311, 318, 327
" Mineral output ... ..	327
" Persons employed ... ..	316, 326
" Legislation ... ..	327, 328
Virginia, Persons employed at Coal Mines ... ..	482
" Coal-cutting machines ... ..	480
Virgin Islands, Mineral deposits ... ..	374
Vitriol ore, Output of :	
Austria ... ..	382
German Empire ... ..	420
Hungary ... ..	388
Japan ... ..	444
Prussia ... ..	427
Volcanic Ash, Output of Australia ... ..	317
" " Queensland ... ..	322

## W.

WALES, Coal traffic in North and South Wales ... ..	196, 197
" Explosions from naked lights ... ..	...77, 78
" Mineral output of, Summary ... ..	148
<i>(See also under each County.)</i>	
" North and South Wales Coalfields :	
Counties ... ..	54
Fatal accidents ... ..	95-99
Mineral output ... ..	190, 191
Persons employed ... ..	55, 56, 191
Wallyford Colliery, Irruption of water ... ..	89
Warwick Canal, Coal traffic ... ..	199
Warwickshire, Clay ... ..	166, 184
" Coal ... ..	166, 188, 192
" Gravel and sand ... ..	166, 220
" Igneous rocks ... ..	166, 222
" Iron ore ... ..	166, 226, 227
" Iron pyrites ... ..	166, 246
" Limestone ... ..	167, 260
" Sandstone ... ..	167, 275
" Coal traffic ... ..	197, 199
" Death-rate from accidents ... ..	99
" Lead smelters ... ..	259
" Tin smelters ... ..	290
" Persons employed ... ..	57, 62, 65, 99, 167
Washington, Accidents at coal mines ... ..	486
" Persons employed ... ..	482
Waterford Co., Clay ... ..	170, 185
" Gravel and sand ... ..	170, 221
" Igneous rocks ... ..	170, 223
" Limestone ... ..	171, 261
" Sandstone ... ..	171, 276
" Persons employed ... ..	67, 171
Watergate Colliery Accident ... ..	76
Weaver Navigation Co., Salt conveyed ... ..	273, 274
Wei-hai-wei, gold mine ... ..	374
Wells, Brine, dredging, &c., County output of minerals from ... ..	164, 165
Western Australia, Fatal accidents ... ..	310, 311, 318, 329
" Mineral output ... ..	329
" Persons employed ... ..	316, 328
" Legislation ... ..	329, 330
Westfalite, accidents with ... ..	86
Westmeath Co., Limestone ... ..	171, 261
" Persons employed ... ..	67, 171
" Barytes ... ..	166, 177, 178

## Page.

Westmorland, Coal ... ..	166, 188, 192
" Gypsum ... ..	166, 221
" Igneous rocks ... ..	166, 222
" Lead ore ... ..	167, 249, 250
" Limestone ... ..	167, 260
" Sandstone ... ..	167, 275
" Silver ... ..	249, 250
" Slate ... ..	167, 279
" Lead smelters ... ..	259
" Persons employed ... ..	57, 62, 65, 167
West Virginia, Accidents at Coal Mines ... ..	486
" Output of coal ... ..	484
" Persons employed ... ..	482
" Coal-cutting machines ... ..	479, 480
Wexford Co., Igneous rocks ... ..	170, 223
" Limestone ... ..	171, 261
" Sandstone ... ..	171, 276
" Slate ... ..	171, 279
" Persons employed ... ..	67, 171
Whetstones, Production of :	
Bavaria ... ..	426
France ... ..	414
White salt, Conveyed by railway, canal &c. ... ..	273, 274
" Exported ... ..	274
" Produced in United Kingdom ... ..	272
Wicklow Co., Copper ore ... ..	170, 208, 209
" Gravel and sand ... ..	170, 221
" Igneous rocks ... ..	170, 223
" Iron pyrites ... ..	170, 246
" Limestone ... ..	171, 261
" Ochre ... ..	171, 264, 265
" Persons employed ... ..	63, 67, 171
Wigtown, Clay ... ..	168, 184
" Igneous rocks ... ..	168, 223
" Persons employed ... ..	66, 169
Wiltshire, Chalk ... ..	166, 182
" Clay ... ..	166, 184
" Gravel and sand ... ..	166, 220
" Iron ore ... ..	166, 226, 231
" Limestone ... ..	167, 260
" Sandstone ... ..	167, 275
" Blast furnaces ... ..	235, 240
" Persons employed ... ..	62, 65, 167
Winding ropes, breakage of ... ..	83
Wolfram, Output of :	
United Kingdom ... ..	10, 41, 147, 291, 314
Australia... ..	317
Austria ... ..	382
Bolivia ... ..	396
German Empire... ..	420
New South Wales ... ..	320
Portugal ... ..	456
Queensland ... ..	322
Saxony ... ..	432
South Australia ... ..	324
Spain ... ..	469
Tasmania... ..	326
Worcester Canal, Coal traffic ... ..	199
Worcestershire, Clay ... ..	166, 184
" Coal... ..	166, 188, 192
" Gravel and sand ... ..	166, 220
" Igneous rocks ... ..	166, 222
" Iron ore ... ..	166, 226, 227, 231
" Limestone ... ..	167, 260
" Salt ... ..	167, 272
" Sandstone ... ..	167, 275
" Blast furnaces ... ..	235, 240
" Coal traffic... ..	199
" Copper smelters ... ..	216
" Death-rate from accidents ... ..	100
" Persons employed ... ..	57, 62, 65, 100, 167
Worsley Mesnes Colliery Accident... ..	88
Wyoming, Accidents at Coal Mines ... ..	486
" Persons employed at Coal Mines ... ..	482
" Coal-cutting machines ... ..	480



## Y.

	Page.
YORKSHIRE, Alum shale ... ..	167, 172
" Barytes ... ..	166, 177, 179
" Chalk ... ..	166, 182
" Chert and flint ... ..	166, 183
" Clay ... ..	166, 184
" Coal ... ..	166, 188, 192
" Fluor spar ... ..	167, 217
" Gravel and sand ... ..	166, 220
" Gypsum ... ..	166, 221
" Igneous rocks... ..	166, 222
" Iron ore ... ..	166, 226, 227, 231
" Iron pyrites ... ..	166, 246
" Lead ore ... ..	167, 249-251
" Limestone ... ..	167, 260
" Salt ... ..	167, 272
" Sandstone ... ..	167, 275
" Blast furnaces ... ..	235, 240
" Coal traffic ... ..	196, 197, 199
" Copper smelters ... ..	216
" Death-rate from accidents ... ..	99
" Lead smelters... ..	259
" Persons employed ... ..	57, 59, 62, 65, 99, 167
" Coalfield, Counties ... ..	54
" " Fatal accidents ... ..	95-98
" " Mineral output ... ..	190, 191
" " Persons employed ... ..	55, 56, 191
Young persons, Fatal accidents to ... ..	35, 72, 117-119

## Z.

	Page.
ZINC, Average price in the London market ... ..	296, 297
" Diagram shewing fluctuations in price from 1873 to 1904 (Plate IV.) ... ..	295
" Obtainable from British ores ... ..	147, 292-294
" Smelters in United Kingdom ... ..	297
" and zinc ore, Exported ... ..	295, 296
" " Imported ... ..	295
" or zinc ore, Output of :	
United Kingdom 10, 41, 147, 292-294, 309, 314, 315	
Algeria ... ..	309, 376
Australia ... ..	309, 317
Austria ... ..	309, 369
Belgium ... ..	309, 394
Bolivia ... ..	309, 396
Canada ... ..	309, 338
Chili... ..	309
France ... ..	309, 415
German Empire ... ..	309, 430
Greece ... ..	309, 434
Italy ... ..	309, 441
Mexico ... ..	309, 447
New South Wales ... ..	320
Norway ... ..	309, 450
Ontario ... ..	342
Portugal ... ..	309, 456
Prussia ... ..	427
Russia ... ..	309, 462
Saxony ... ..	432
Servia ... ..	309
Spain ... ..	309, 469
Sweden ... ..	309, 472
Tasmania ... ..	326
Tunis ... ..	309, 476
Turkey ... ..	309, 478
United States ... ..	309, 483, 484
Zircon, Output of :	
United States ... ..	482



PART IV.—COLONIAL AND FOREIGN STATISTICS

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STATISTICS RELATING TO PERSONS EMPLOYED, OUTPUT,  
AND ACCIDENTS AT MINES AND QUARRIES IN  
BRITISH COLONIES AND IN FOREIGN COUNTRIES

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*Presented to both Houses of Parliament by Command of His Majesty*

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OFFICE

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By HARRISON & SONS, LTD., 23, ADOLPHUS STREET, E.

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The Journal of the Board of Agriculture is published monthly by the Board, at 2, WHITEHALL PLACE, S.W. 1. From April 1906, it was published by Messrs. Loughton and Co., Ltd., 2, WILKINGTON STREET, ST. MARK, W.C. 2.

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**ROYAL COMMISSIONS.** Evidence, in separate parts:—CANALS: IRELAND: IRISH RAILWAYS: SHIPPING: RIVER.

[Ct. 2075, 2278.] SMALL HOUSING. Report of Departmental Committee on, with Evidence. 2.

[Ct. 2513.] DECREASE OF THE AGRICULTURAL POPULATION OF GREAT BRITAIN, 1881-1905. Report.

[Ct. 2022, 2150.] FISHING (IRISH AND SCOTLAND). Royal Commission. Second Report. Part I.

[Ct. 2225, 2226.] VIVISECTION. Royal Commission. First Report, with Evidence.

[Ct. 2275, 2276.] ANTERIAL DISEASE COMMISSION. Report, Evidence, &c.

[Ct. 2227, 2228, 2229, 2230.] CRIMINAL COMMISSIONS, 1905. Despatch on, with Agenda.

[Ct. 2229, 2230.] COMMISSIONERS FOR THE IMPROVED DRAINAGE. Report of Commission, with Evidence &c.

[Ct. 2229, 2230.] MINING (IRISH HOME RAIL). First Report of Departmental Commission, with Appendix.

H.C. No. 623. LAND VALUE TAXATION, &c. 1905-1906. Report from Select Committee, with Evidence, Appendix.

H.C. No. 576. HOURS OF THE WORKING CLASSES. Report from Select Committee, with Evidence, Appendix, and Index.

MINES. Reports of H.M. Inspectors for 1905, with Summary of the Statistical portions under the Coal Mines Regulation Act, 1887; Metalliferous Mines Regulation Act, 1872-1873. &c.

(Inspector) Act, 1902, Particular Nos. 1 to 12. In course of issue.

MINES IN THE UNITED KINGDOM AND THE ISLE OF MAN. List of, for 1905.

MINES. 1905. 1905. 1905. 1905.

MINES. 1905. 1905. 1905. 1905.

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GENERAL REPORT AND STATISTICS  
For 1905.**

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**PART IV.—COLONIAL AND FOREIGN STATISTICS.**

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# CONTENTS.

	PAGE.
Introduction ... ..	291, 292
British Empire and Foreign Countries :—	
Summary of Persons Employed at Mines and Quarries ... ..	294
Summary of Output of certain Minerals ... ..	295
Summary of Accidents and Death-rates per 1,000 Persons Employed at Mines and Quarries ... ..	296, 297
Details relating to Persons Employed, Mineral Output, and Accidents at Mines Quarries, and other Mineral Workings in the British Empire :—	
United Kingdom ... ..	299-301
British Colonies and Dependencies :—	
Aden ... ..	302
Australia ... ..	302-315
Bahamas ... ..	315
Barbados ... ..	315
Basutoland ... ..	316
Bechuanaland Protectorate... ..	316
British Borneo ... ..	316, 317
British Central Africa Protectorate ... ..	317
British East Africa Protectorate ... ..	317
British Guiana ... ..	318, 319
British New Guinea ... ..	319, 320
British Solomon Islands ... ..	321
Canada ... ..	320-328
Cape Colony ... ..	328-332
Ceylon ... ..	333, 334
Channel Islands ... ..	334
Christmas Island ... ..	334
Cyprus ... ..	334, 335
Dominica ... ..	335
Falkland Islands ... ..	335
Federated Malay States ... ..	335-337
Gambia ... ..	337
Gold Coast ... ..	337, 338
India ... ..	338-345
Jamaica ... ..	345
Malta ... ..	345
Natal ... ..	345, 346
Newfoundland ... ..	346-348
New Zealand... ..	348-350
Northern Nigeria ... ..	350
Orange River Colony ... ..	350-352
Redonda ... ..	352
Rhodesia ... ..	352, 353
St. Helena ... ..	353
St. Lucia ... ..	353
Somali Coast Protectorate ... ..	354
Southern Nigeria ... ..	354
Straits Settlements ... ..	354
Transvaal ... ..	355-358
Trinidad ... ..	358-360
Turks and Caicos Islands ... ..	360
Uganda Protectorate ... ..	360
Virgin Islands ... ..	361
Wei-hai-wei ... ..	361
Details relating to Persons Employed, Mineral Output, and Accidents at Mines, Quarries, and other Mineral Workings in Foreign Countries :—	
Abyssinia ... ..	362
Algeria ... ..	362-364
Arabia... ..	364
Argentine Republic... ..	364, 365
Austria-Hungary ... ..	365-375
Belgium ... ..	377-381
Bolivia ... ..	381, 382
Bosnia and Herzegovina ... ..	375, 376



Details relating to Persons Employed, &c.—*cont.*

	PAGE.
Brazil ... ..	382, 383
Bulgaria ... ..	384
Cameroons ... ..	384
Canary Islands ... ..	385
Chili ... ..	385, 386
China... ..	387, 388
Colombia ... ..	388, 389
Congo Independent State ... ..	389
Corea ... ..	389
Costa Rica ... ..	389
Cuba ... ..	390
Denmark ... ..	390, 391
Dutch East Indies ... ..	391-393
Dutch Guiana or Surinam ... ..	393
Dutch West Indies ... ..	394
Ecuador ... ..	394
Egypt ... ..	395, 396
Eritrea ... ..	396
Formosa ... ..	396
France... ..	396-401
French Congo ... ..	401
French Guiana ... ..	401
French West Africa... ..	402
German East Africa... ..	402
German Empire ... ..	402-418
German South West Africa ... ..	419
Greece ... ..	419, 420
Guatemala ... ..	421
Hayti ... ..	421
Holland ... ..	421, 422
Honduras ... ..	423
Indo-China ... ..	423, 424
Italy ... ..	424-428
Japan ... ..	428-430
Johore... ..	430
Liberia ... ..	430
Luxemburg ... ..	430
Madagascar ... ..	431
Mexico ... ..	431-433
Morocco ... ..	433
New Caledonia ... ..	433, 434
Nicaragua ... ..	434, 435
Norway ... ..	435, 436
Panama ... ..	437
Paraguay ... ..	437
Persia ... ..	437
Peru ... ..	438, 439
Philippine Islands ... ..	439, 440
Porto Rico .. ..	440
Portugal ... ..	440-442
Portuguese East Africa ... ..	442, 443
Portugese West Africa ... ..	443
Roumania ... ..	443, 444
Russia ... ..	445-449
Sandwich Islands ... ..	449
Santo Domingo ... ..	449
Servia ... ..	450, 451
Siam ... ..	451, 452
Spain ... ..	453-455
Spitzbergen ... ..	456
Sweden ... ..	456-458
Switzerland ... ..	458, 459
Tunis ... ..	460
Turkey ... ..	460-462
United States... ..	462-469
Uruguay ... ..	469
Venezuela ... ..	469, 470
Index to Parts I., II., III., and IV. ... ..	471-497

**MINES AND QUARRIES:**

**GENERAL REPORT AND STATISTICS**

**For 1905.**

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**PART IV.—COLONIAL AND FOREIGN STATISTICS.**

---

**INTRODUCTION.**

---

This part of the Report is intended to give general information concerning the mining and quarrying industries of the colonies and foreign countries; it is compiled from various official and unofficial sources, which are duly indicated in every case. Great difficulties in preparing this part of the volume arise either from want of adequate official statistics or from the lateness of their publication. In several cases the statistics for 1905 were not received until the present year was well advanced.

The general results are summed up in Tables 284, 285, and 286, and though the figures are not complete, they are sufficient to give a fair general idea of the relative importance of mining in each country.

According to Table 284 the number of persons engaged in mining and quarrying at home and abroad in 1905 exceeded 5 millions. Of this total, roughly speaking, nearly one-fifth were employed in the United Kingdom and more than one-third in the British Empire. It should be noted, however, that no statistics are published by several countries, *e.g.*, Bolivia, Brazil, China, Persia, Roumania and Turkey, in which mining is carried on, or for the ore mines and quarries of the United States, and the figure in this Table probably falls considerably short of the real total.

More than half of the total number were employed in getting coal alone; Great Britain employing over 843,000, the United States 626,000, Germany 548,000, France 175,000, Belgium 135,000, Austria 119,000, and India nearly 90,000.

Table 285 summarizes the world's output of the most important minerals in 1905. The total amount of coal produced was 941 million tons, the value of which is estimated at more than 305 million pounds sterling. The quantity and value compared with 1904 show an increase of 55 million tons and 10 million pounds sterling respectively.



The following figures show the main sources from which the fuel supply of the world is obtained :—

Country.	Quantity.		Value.	
	Metric Tons.	Increase or Decrease on 1904.	£	Increase or Decrease on 1904.
United States ... ..	356,454,000	Metric Tons. + 37,288,000	97,897,000	+ £ 6,650,000
Great Britain ... ..	239,918,000	+ 3,760,000	82,039,000	— 1,813,000
Germany ... ..	173,811,000	+ 4,360,000	58,611,000	+ 1,313,000
Austria-Hungary ... ..	42,454,000	+ 1,923,000	10,462,000	+ 387,000
France ... ..	35,928,000	+ 1,760,000	18,562,000	+ 385,000
Belgium ... ..	21,775,000	— 986,000	11,007,000	— 459,000

Gold shows an increase of 63,960 kilograms, the total output being 580,087 kilograms (18,650,217 ozs.) of which the value is estimated at over 79 millions sterling. The British Empire supplied nearly 59 per cent. of the output; Australia contributing  $19\frac{1}{2}$  per cent., the Transvaal  $26\frac{1}{3}$  per cent., and Canada  $3\frac{3}{4}$  per cent. of the total. The United States contributed  $22\frac{3}{4}$  per cent.

In the case of iron, the United States with an output of  $23\frac{1}{3}$  million tons is considerably ahead of any other country. The German Empire with 6 million tons and Great Britain with about  $4\frac{3}{4}$  million tons come next. It is important to point out that the quantities of iron, and indeed the quantities of the other metals included in Table 285, are those which are considered obtainable from the ores raised in the countries in question, and must not necessarily be taken as a measure of their metallurgical industries.

The value of the world's output of copper is about equal to the combined value of the outputs of silver, tin and zinc.

The total value of the figures shown in Table 285 may be roughly taken as representing over 700 millions sterling.

Table 286 shows the loss of life from accidents in mines and quarries, and the death-rates from accidents per 1,000 persons employed.

Taking coal mines for which the figures are fairly complete, it will be seen that the death-rate of the United Kingdom is 1·35, and for the British Empire 1·34; while for France it is 1·04, for Germany 2·05, and for the United States 3·45. The death-rate for foreign countries generally is 2·40.

In the case of gold mines, complete figures are only available for the British Empire. They show a considerable increase in the death-rate from 2·55 in 1904 to 3·58 in 1905

Home Office, Whitehall,  
8th June, 1907.

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**S U M M A R I E S.**

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**PERSONS EMPLOYED—OUTPUT—ACCIDENTS,  
1904—1905.**

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TABLE No. 284.  
SUMMARY of the number of PERSONS EMPLOYED at MINES, QUARRIES, and other  
MINERAL WORKINGS in the BRITISH EMPIRE and in FOREIGN COUNTRIES  
during the YEARS 1904 and 1905.

Country.	1904.	1905.
GREAT BRITAIN AND IRELAND ... ..	974,634	982,343
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS :—		
Aden ... ..	*	*
Australia ... ..	111,448	116,250
Bahamas ... ..	203	248
Barbados ... ..	233	219
Basutoland ... ..	*	*
Bechuanaland Protectorate ... ..	*	*
British Borneo ... ..	500	500
British Central Africa Protectorate ... ..	*	*
British East Africa Protectorate ... ..	*	*
British Guiana ... ..	11,241	11,133
British New Guinea ... ..	275	325
British Solomon Islands... ..	*	*
Canada (a)... ..	35,748	35,831
Cape Colony ... ..	19,423†	24,108
Ceylon ... ..	65,728	69,153
Channel Islands ... ..	1,200	1,200
Christmas Island ... ..	550‡	550‡
Cyprus ... ..	205	422
Dominica ... ..	*	*
Falkland Islands ... ..	*	*
Federated Malay States ... ..	192,669	209,014
Gambia ... ..	*	*
Gold Coast... ..	17,044	12,969
India ... ..	153,680	152,579
Jamaica ... ..	*	*
Malta ... ..	1,060‡	1,060‡
Natal (including Zululand) ... ..	5,445	6,624
Newfoundland ... ..	2,375	2,284
New Zealand ... ..	14,186	12,631
Nigeria ... ..	*	*
Orange River ... ..	6,085	6,289
Redonda ... ..	99	*
Rhodesia ... ..	11,717§	14,600§
St. Helena ... ..	*	*
St. Lucia ... ..	*	*
Somali Coast Protectorate ... ..	*	*
Southern Nigeria... ..	*	*
Straits Settlements ... ..	*	*
Transvaal ... ..	104,236	162,777
Trinidad ... ..	1,271	1,361
Turks and Caicos Islands ... ..	1,200	1,200
Uganda Protectorate ... ..	*	*
Virgin Islands ... ..	*	*
Wei-hai-wei ... ..	*	409
TOTAL for BRITISH EMPIRE ... ..	1,732,455†	1,826,079
FOREIGN COUNTRIES :—		
Austria-Hungary ... ..	225,371	226,370
Bosnia and Herzegovina ... ..	2,288	2,750
Belgium ... ..	177,308	174,086
Bulgaria ... ..	2,305	1,760
Chili ... ..	46,592	46,592
Corea ... ..	1,236‡	1,236‡
Denmark ... ..	—	—
Greenland ... ..	36	36
Egypt ... ..	—	1,354
France ... ..	322,356	320,730
Algeria ... ..	9,861	13,395
French Congo ... ..	—	125
French West Africa ... ..	90	154
Indo-China ... ..	4,269†	4,820
Madagascar ... ..	3,000	3,000
New Caledonia ... ..	2,773†	2,828
Tunis ... ..	2,225	3,472
German Empire ... ..	814,352¶	825,773¶
Greece ... ..	9,893†	9,934
Holland ... ..	4,774	4,646
Dutch East Indies ... ..	27,595	25,543
Italy ... ..	125,055	126,758
Japan ... ..	170,687†	159,716
Formosa ... ..	—	2,550
Luxemburg ... ..	6,262	6,278
Mexico ... ..	81,368†	81,368**
Norway ... ..	3,218	4,513
Panama ... ..	1,000	1,000
Peru ... ..	12,861	12,861
Portugal ... ..	8,684††	9,881††
Roumania ... ..	*	*
Russia ... ..	334,003‡‡	334,003‡‡
Servia ... ..	2,139	3,737
Siam ... ..	26,250	26,250**
Spain ... ..	93,375	105,428
Sweden ... ..	14,225	14,574
Switzerland ... ..	1,368	1,368
United States ... ..	692,311†(b)	650,393(c)
TOTAL for FOREIGN COUNTRIES ... ..	3,229,130†	3,209,782
TOTAL for the WORLD ... ..	4,961,585†	5,035,861

\* Information not available. † Revised figures. ‡ Figures for 1900.  
§ Matabele and Mashonaland Mines only. || Figures for 1903.  
¶ These figures include the average number of persons employed full time at Quarries, see p. 410.  
\*\* Figures for 1904. †† Including persons employed at Quarries for 1890. ‡‡ Figures for 1903.  
(a) For British Columbia, Nova Scotia, Ontario, and Quebec only.  
(b) Coal Miners and only Ore Miners of Colorado, Montana and Missouri.  
(c) Coal Mines and only Ore Miners of Michigan (Marquette Co.), Montana and Tennessee.

TABLE No. 285.

of OUTPUT\* of CERTAIN MINERALS and METALS (contained in or obtained from Ore raised in the various Countries) in the BRITISH EMPIRE and in FOREIGN COUNTRIES during the Year 1905.

COUNTRY.	Coal.	Copper.	Fine Gold.	Iron.	Lead.	Petroleum.	Salt.	Fine Silver.	Tin.	Zinc.
	Metric Tons.	Metric Tons.	Kilos.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Kilos.	Metric Tons.	Metric Tons.
AIN AND IRELAND..	239,918,239	727	189	4,836,577	20,977	—	1,920,239	5,212	4,540	9,023
ONIES, DEPENDENT-POSSESSIONS:—										
.. .. .	7,616,248	35,280†	113,941	4,325†	181,742†	—	101,327	423,072†	7,473†	31,681†
.. .. .	—	—	—	—	—	—	88,251	—	—	—
.. .. .	—	—	—	—	—	—	2,441	—	—	—
and Protectorate	—	—	—	—	—	—	—	—	—	—
rneo..	58,788	—	1,419	—	—	—	—	—	—	—
tral Africa Protectorate	—	—	—	—	—	—	—	—	—	—
st Africa Protectorate..	—	—	—	—	—	—	—	—	—	—
ana..	—	—	2,447†	—	—	—	—	—	—	—
w Guinea..	—	—	412†	—	—	—	—	—	—	—
omon Islands..	7,961,397	21,590	21,796	116,976†	25,384	86,730†	41,159	185,839	—	216†
oy .. .. .	148,880	10,397†	3	—	—	—	6,998	—	—	—
lands .. .. .	—	—	—	—	—	—	30,583	—	—	—
Island .. .. .	—	—	—	—	—	—	—	—	—	—
.. .. .	—	—	—	—	—	—	1,905	—	—	—
lands .. .. .	—	—	—	—	—	—	—	—	—	—
Malay States ..	—	—	282	—	—	—	—	—	51,809	—
.. .. .	—	—	—	—	—	—	—	—	—	—
.. .. .	8,552,423	93†	4,787†	—	—	581,519	1,212,618	—	77†	—
.. .. .	—	—	17,673†	40,848†	—	—	—	—	—	—
.. .. .	—	—	—	—	—	—	—	—	—	—
uding Zululand)	1,147,531	—	3	—	—	—	—	—	—	—
land .. .. .	—	2,859†	174†	350,521†	—	—	—	—	—	—
and .. .. .	1,811,229	1	15,333†	—	—	—	—	36,894	—	—
ver .. .. .	167,282	—	—	—	—	—	10,079	—	—	—
.. .. .	98,751	—	10,863†	—	579	—	—	3,777	—	—
.. .. .	—	—	—	—	—	—	—	—	—	—
.. .. .	—	—	—	—	—	—	—	—	—	—
st Protectorate ..	—	—	—	—	—	—	—	—	—	—
Nigeria .. .. .	—	—	—	—	—	—	—	—	—	—
lements .. .. .	2,048,632	—	152,704	—	—	—	461	16,800	—	—
.. .. .	—	—	—	—	—	—	—	—	—	—
Caicos Islands ..	—	—	—	—	—	—	29,567	—	—	—
rotectorate .. ..	—	—	—	—	—	—	—	—	—	—
ands .. .. .	—	—	—	—	—	—	—	—	—	—
rel .. .. .	—	—	—	—	—	—	—	—	—	—
FOR BRITISH EMPIRE..	289,929,379	70,947	342,005	5,349,247	228,682	608,249	3,444,758	670,394	63,899	40,920
COUNTRIES:—										
.. .. .	—	—	114†	—	—	—	14,000†	—	—	—
Republic .. .. .	—	157†	141	—	—	—	25,000†	2,058†	—	—
.. .. .	42,454,004	622†	3,869	1,520,633†	13,201†	794,962	538,786	54,399	4†	6,475†
.. .. .	540,236	67	—	67,396†	76†	—	54,812†	—	—	—
and Herzegovina ..	21,775,280	—	—	63,983†	—	—	—	—	—	1,316†
.. .. .	—	4,045†	256†	—	—	—	—	76,537†	8,950†	—
.. .. .	—	—	3,076†	—	—	—	—	—	—	—
.. .. .	170,080	—	—	—	—	—	11,535**	—	—	—
.. .. .	789,229	29,605	731	—	—	—	18,263†	15,135	—	—
.. .. .	1,213,160†	—	6,772†	61,570†	3,276†	—	180,856†	—	3,660†	950†
.. .. .	—	—	2,971	—	—	—	—	29,432	—	—
.. .. .	—	—	140†	—	—	—	—	—	8	—
.. .. .	3,754	70†	3,892†	—	478†	—	—	—	—	—
.. .. .	—	1,825†	425†	—	—	—	—	—	—	—
.. .. .	—	—	200†	312,430†	—	—	—	1,244†	—	—
.. .. .	—	—	300†	—	—	—	—	—	—	—
.. .. .	35,927,704	250	243	2,401,607†	7,300	—	36,578	—	—	26,100
.. .. .	85	229†	—	255,374†	2,690†	—	1,129,088	27,700	—	18,300†
.. .. .	—	534†	—	—	—	—	26,086	336	—	—
Congo .. .. .	—	—	—	—	—	—	—	—	—	—
Guinea .. .. .	—	—	2,822†	—	—	—	—	—	—	—
.. .. .	297,439	—	68†	—	—	—	23,766†	—	7†	—
.. .. .	—	—	2,100†	4†	—	—	—	—	—	—
.. .. .	—	—	—	—	—	—	—	—	—	—
.. .. .	—	—	19†	—	—	—	—	—	—	—
.. .. .	—	—	—	—	10,030†	—	52,900	—	—	13,000†
.. .. .	—	—	4	—	—	—	—	—	—	—
.. .. .	173,810,669	24,480†	100	6,065,357†	83,855†	78,869	1,777,557	180,977	27†	185,600†
.. .. .	—	28†	—	—	—	—	—	—	—	—
.. .. .	11,757	—	—	252,800	13,700	—	25,201	24,163	—	9,025
.. .. .	—	7	—	—	—	—	—	—	—	—
.. .. .	468,377	—	—	—	—	—	—	—	—	—
.. .. .	330,553	—	2,282	—	—	1,062,224	—	7,706	13,519	—
.. .. .	—	—	1,023	—	—	—	—	—	—	—
.. .. .	—	—	123	—	—	—	—	—	—	—
.. .. .	—	—	143†	—	—	—	17,799†	—	—	—
.. .. .	—	—	—	—	14†	—	2,140†	13,548†	—	—
.. .. .	412,916	4,731	13	189,969	23,035	6,122	437,699	21,039	—	64,077
.. .. .	11,542,041	33,715	2,969	48,378	2,255	166,033	701,965†	82,981	26	—
.. .. .	39,699	—	1,558†	—	—	—	22,771	—	—	—
.. .. .	—	—	—	2,374,510†	—	—	—	—	—	—
.. .. .	700,000†	69,500†	23,279†	5,266†	47,920†	—	—	214	2,348,531	1,097†
.. .. .	—	837†	—	—	—	—	545	—	—	—
.. .. .	—	7,200	—	22,126†	555†	—	—	7,100	—	1,150†
.. .. .	—	—	1,173†	—	—	—	—	—	—	—
.. .. .	—	8	—	—	—	—	—	—	—	—
.. .. .	75,338	12,213	777	—	1,476	49,700	21,039	191,476	—	—
.. .. .	—	—	12	—	—	—	—	—	—	—
.. .. .	11,449	4,512†	4	1,800	198	—	—	—	12	—
.. .. .	—	—	53†	—	—	—	—	—	—	—
.. .. .	101,058†	—	—	—	—	611,356	109,000†	—	—	—
.. .. .	19,028,008	8,840	43,000†	3,025,790	100†	6,562,000	1,054,937†	5,378†	3†	7,636
.. .. .	184,401	35	87	—	42	—	—	10	—	—
.. .. .	—	—	78†	—	23†	—	—	—	—	—
.. .. .	3,371,919	53,120†	—	4,479,064	157,252	—	493,451	22,568	5,900†	63,348
.. .. .	322,384	784†	—	2,706,900†	638†	—	—	2,532†	53	19,605†
.. .. .	—	—	—	—	—	—	50,900	—	—	—
.. .. .	450,000	700†	—	—	4,100†	—	70,000†	17,567†	—	—
.. .. .	356,454,088	409,103	132,680	23,361,576	273,973	17,106,994†	3,297,384	1,744,956	—	184,931
.. .. .	—	—	49†	—	—	—	—	—	—	—
.. .. .	—	32†	821	—	—	—	7,410†	—	—	—
FOREIGN COUNTRIES..	671,985,628	667,235	238,082	47,216,391	646,015	26,428,160	10,806,384	4,877,424	31,269	597,670
for the WORLD ..	941,015,007	738,202	580,087	52,565,638	874,697	27,096,409	14,251,142	5,547,818	95,168	638,590

one or two cases in which the figures of the minerals are not obtainable the quantity is given. Fuller particulars will be the detailed tables.

† Estimated.

‡ Figures for 1904.

§ Figures for 1900.

|| Figures for 1903.

¶ The quantities of copper, silver and tin have been estimated on the values given in table 423.

\*\* Figures for 1901.

†† Output from certain Provinces only.

‡‡ Figures for 1902.



TABLE No. 286.

## SUMMARY of ACCIDENTS at MINES, QUARRIES, and other MINERAL WORKINGS in the

COUNTRY.	DEATHS FROM ACCIDENTS.											
	1904.						1905.					
	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.
GREAT BRITAIN AND IRELAND ..	1,084	—	56	1,080	112	1,202	1,133	—	67	1,205	60	1,304
BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—												
Aden* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Australia:—												
New South Wales .. .. .	12	11	18	41	—	—	24	10	22	56	—	—
Queensland .. .. .	1	26	4	31	—	—	1	16	7	24	—	—
South Australia .. .. .	—	—	—	7	—	—	—	—	—	4	—	—
Tasmania .. .. .	—	—	—	9	—	—	—	—	—	7	—	—
Victoria .. .. .	2	17	—	19	—	—	2	20	—	23	—	—
Western Australia .. .. .	—	41	1	42	—	—	—	34	—	34	—	—
Bahamas* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Barbados* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Basutoland* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Bechuanaland Protectorate* ..	—	—	—	—	—	—	—	—	—	—	—	—
British Borneo* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
British Central Africa Protectorate*	—	—	—	—	—	—	—	—	—	—	—	—
British East Africa Protectorate*	—	—	—	—	—	—	—	—	—	—	—	—
British Guiana .. .. .	—	1	—	1	—	1	—	3	—	3	—	3
British New Guinea* .. .. .	—	—	—	—	—	—	—	5	—	5	—	—
British Solomon Islands* ..	—	—	—	—	—	—	—	—	—	—	—	—
Canada:—												
British Columbia .. .. .	37	†	14	51	—	—	12	†	14	26	—	—
Nova Scotia .. .. .	20	—	—	—	—	—	20	1	—	—	—	—
Ontario .. .. .	—	6	1	7	—	—	—	—	4	4	—	—
Quebec .. .. .	—	—	—	—	—	4	—	—	—	—	—	2
Cape Colony .. .. .	6	—	321	—	—	—	3	—	66†	—	—	—
Ceylon .. .. .	—	—	—	18	1	19	—	—	—	20	—	20
Channel Islands* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Christmas Island* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Cyprus* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Dominica* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Falkland Islands* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Federated Malay States .. .. .	—	—	—	79	—	—	—	—	—	67	—	—
Gambia* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Gold Coast .. .. .	—	14	—	14	—	—	—	27	—	27	—	—
India .. .. .	67	46	17	130	—	130	60	77	12	149	—	149
Jamaica* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Malta* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Natal (including Zululand)† ..	16	—	—	—	—	—	22	—	1	23	—	—
Newfoundland .. .. .	—	—	2	2	2	4	—	—	—	—	6	6
New Zealand .. .. .	4	15	—	19	—	—	6	21	—	27	—	—
Nigeria* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Orange River .. .. .	—	—	—	19	—	—	—	—	—	28	—	—
Redonda* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Rhodesia* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
St. Helena* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
St. Lucia* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Somali Coast Protectorate* ..	—	—	—	—	—	—	—	—	—	—	—	—
Southern Nigeria* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Straits Settlements* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Transvaal .. .. .	18	393	24	435	—	—	31	774	14	819	—	—
Trinidad* .. .. .	—	—	—	17	1	18	—	—	—	1	2	3
Turks and Caicos Islands* ..	—	—	—	—	—	—	—	—	—	—	—	—
Uganda Protectorate* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Virgin Islands* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Wei-hai-wei* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL FOR BRITISH EMPIRE ..	1,223	570	—	—	—	—	1,319	988	—	—	—	—
FOREIGN COUNTRIES:—												
Austria-Hungary:—												
Austria .. .. .	110	—	14	124	—	—	183	—	20	203	—	—
Hungary .. .. .	—	—	—	112	—	—	—	—	—	126	—	—
Boemia and Herzegovina ..	3	—	1	4	—	—	15	—	1	16	—	—
Belgium .. .. .	129	—	—	129	32	161	123	—	—	123	10	133
Bulgaria .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
France .. .. .	184	—	41	225	153	378	182	—	28	210	150	360
Algeria .. .. .	—	—	—	4	8	12	—	—	—	6	5	11
German Empire .. .. .	1,034	—	144†	1,178†	235†	1,413†	1,123	—	112†	1,235†	241	1,476
Greece* .. .. .	—	—	—	131	—	—	—	—	—	13	—	—
Holland .. .. .	3	—	—	3	—	—	3	—	—	3	—	—
Italy .. .. .	—	—	—	120	50	170	—	—	—	156	60	228
Japan .. .. .	189†	—	78	267	—	—	256	—	75	331	—	—
Mexico* .. .. .	—	—	—	229†	—	—	—	—	—	—	—	—
Norway* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Peru* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Portugal .. .. .	1	—	2	3	—	—	—	—	2	2	—	—
Roumania* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Russia* .. .. .	—	—	—	—	—	—	—	—	—	—	—	—
Servia .. .. .	—	—	—	6	—	—	—	—	—	8	—	—
Spain .. .. .	—	—	—	322	—	—	—	—	—	243	—	—
Sweden .. .. .	—	—	—	—	—	22	—	—	—	—	—	24
Switzerland .. .. .	—	—	—	1	—	—	—	—	—	—	—	4
United States .. .. .	1,906§§	—	§§	—	—	—	2,158	—	§§	—	—	—
TOTAL FOR FOREIGN COUNTRIES.	3,649†	—	—	—	—	—	4,043	—	—	—	—	—
TOTAL for the WORLD ..	4,872†	—	—	—	—	—	5,362	—	—	—	—	—

\* Information for 1905 not available.

† Included with other mines.

‡ Kimberley and Barkly West Diamond Mines only.

§ The accidents at coal mines relate to producing collieries only.

|| Revised figures.

TABLE No. 286.

BRITISH EMPIRE and in FOREIGN COUNTRIES during the Years 1904 and 1905.

DEATH-RATES PER 1,000 PERSONS EMPLOYED.												COUNTRY.
1904.						1905.						
Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	Coal Mines.	Gold Mines.	Other Mines.	All Mines.	Quarries.	All Mines and Quarries.	
1'24	—	1'29	1'24	1'15	1'23	1'35	—	1'52	1'36	1'04	1'33	GREAT BRITAIN AND IRELAND.
—	—	—	—	—	—	—	—	—	—	—	—	BRITISH COLONIES, DEPENDENCIES, AND POSSESSIONS:—
—	—	—	—	—	—	—	—	—	—	—	—	Aden.*
—	—	—	—	—	—	—	—	—	—	—	—	Australia:—
'85	1'03	1'38	1'08	—	—	1'70	'97	1'51	1'44	—	—	New South Wales.
'75	2'70	'90	2'01	—	—	'70	1'50	1'27	1'36	—	—	Queensland.
—	—	—	'86	—	—	—	—	—	'52	—	—	South Australia.*
—	—	—	1'45	—	—	—	—	—	1'06	—	—	Tasmania.
3'40	'70	—	'76	—	—	3'12	'79	—	'84	—	—	Victoria.
—	2'43	2'21	2'38	—	—	—	2'02	—	1'91	—	—	Western Australia.
—	—	—	—	—	—	—	—	—	—	—	—	Bahamas.*
—	—	—	—	—	—	—	—	—	—	—	—	Barbados.*
—	—	—	—	—	—	—	—	—	—	—	—	Basutoland.*
—	—	—	—	—	—	—	—	—	—	—	—	Bechuanaland Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	British Borneo.*
—	—	—	—	—	—	—	—	—	—	—	—	British Central Africa Protectorate.*
—	'09	—	'09	—	'09	—	'27	—	'27	—	27	British East Africa Protectorate.*
—	—	—	—	—	—	—	15'38	—	15'38	—	—	British Guiana.
—	—	—	—	—	—	—	—	—	—	—	—	British New Guinea.*
—	—	—	—	—	—	—	—	—	—	—	—	British Solomon Islands.*
8'31	†	4'23	6'44	—	—	2'72	†	3'89	3'20	—	—	Canada:—
2'23	—	—	—	—	—	1'86	1'99	—	—	—	—	British Columbia.
—	20'09	'94	3'16	—	'79	—	—	3'40	1'63	—	—	Nova Scotia.
—	—	—	—	—	—	—	—	—	—	—	'40	Ontario.
2'23	—	2'26‡	'43	'04	'29	1'23	—	3'45‡	—	—	—	Quebec.
—	—	—	—	—	—	—	—	—	'37	—	'29	Cape Colony.
—	—	—	—	—	—	—	—	—	—	—	—	Ceylon.
—	—	—	—	—	—	—	—	—	—	—	—	Channel Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Christmas Island.*
—	—	—	—	—	—	—	—	—	—	—	—	Cyprus.*
—	—	—	—	—	—	—	—	—	—	—	—	Dominica.*
—	—	—	'41	—	—	—	—	—	'32	—	—	Falkland Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Federated Malay States.
—	'82	—	'82	—	—	—	2'08	—	2'08	—	—	Gambia.*
'72	1'50	'57	'85	—	'85	'67	2'35	'49	'86	—	'88	Gold Coast.
—	—	—	—	—	—	—	—	—	—	—	—	India.
—	—	—	—	—	—	—	—	—	—	—	—	Jamaica.*
—	—	—	—	—	—	—	—	—	—	—	—	Malta.*
3'34	—	—	—	—	—	3'54	—	2'89	3'47	—	—	Natal (including Zululand).‡
1'22	1'38	3'51	3'51	1'11	1'68	1'84	2'24	—	2'14	3'56	2'63	Newfoundland.*
—	—	—	1'34	—	—	—	—	—	—	—	—	New Zealand.
—	—	—	3'12	—	—	—	—	—	—	—	—	Nigeria.*
—	—	—	—	—	—	—	—	—	—	—	—	Orange River.
—	—	—	—	—	—	—	—	—	—	—	—	Redonda.*
—	—	—	—	—	—	—	—	—	—	—	—	Rhodesia.*
—	—	—	—	—	—	—	—	—	—	—	—	St. Helena.*
—	—	—	—	—	—	—	—	—	—	—	—	St. Lucia.*
—	—	—	—	—	—	—	—	—	—	—	—	Somali Coast Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	Southern Nigeria.*
—	—	—	—	—	—	—	—	—	—	—	—	Straits Settlements.*
—	—	—	—	—	—	—	—	—	—	—	—	Transvaal.
2'10	4'36	4'29	4'17	—	—	3'45	5'36	1'51	5'03	—	—	Trinidad.*
—	—	—	168'32	'85	14'18	—	—	—	22'22	1'52	2'20	Turks and Caicos Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Uganda Protectorate.*
—	—	—	—	—	—	—	—	—	—	—	—	Virgin Islands.*
—	—	—	—	—	—	—	—	—	—	—	—	Wei-hai-wei.*
1'25	2'55	—	—	—	—	1'34	3'58	—	—	—	—	TOTAL FOR BRITISH EMPIRE.
—	—	—	—	—	—	—	—	—	—	—	—	FOREIGN COUNTRIES:—
'92	—	'78	'90	—	—	1'53	—	'87	1'43	—	—	Austria-Hungary:—
—	—	—	1'53	—	—	—	—	—	1'71	—	—	Austria.
2'19	—	1'48	1'96	—	—	9'19	—	1'19	5'82	—	—	Hungary.
'93	—	—	'93	'84	'91	'91	—	—	1'43	—	—	Bosnia and Herzegovina.
—	—	—	—	—	—	—	—	—	—	—	—	Belgium.
1'07	—	2'34	1'19	1'15	1'17	1'04	—	1'53	1'09	1'18	1'12	Bulgaria.
—	—	—	1'12	1'27	1'22	—	—	—	1'14	'62	'82	France.
1'90	—	—	1'81**	1'48‡	1'77‡	2'05	—	'99	1'91**	1'50	1'83	Algeria.
—	—	—	1'31‡	—	—	—	—	—	1'30	—	—	German Empire.
1'39	—	—	1'39	—	—	1'47	—	—	1'47	—	—	Greece.*
—	—	—	1'92	1'00	1'47	—	—	—	1'78	'83	1'80	Holland.
2'14	—	1'03‡	1'92‡	—	—	3'26	—	'90	2'14	—	—	Italy.
—	—	—	2'81	—	—	—	—	—	—	—	—	Japan.
—	—	—	—	—	—	—	—	—	—	—	—	Mexico.*
—	—	—	—	—	—	—	—	—	—	—	—	Norway.*
—	—	—	—	—	—	—	—	—	—	—	—	Peru.*
2'05	—	'58	'76	—	—	—	—	'44	'39	—	—	Portugal.
—	—	—	—	—	—	—	—	—	—	—	—	Romania.*
—	—	—	—	—	—	—	—	—	—	—	—	Russia.*
—	—	—	2'97	—	—	—	—	—	2'21	—	—	Servia.
—	—	—	3'45	—	—	—	—	—	2'30	—	—	Spain.
—	—	—	—	—	1'55	—	—	—	—	—	1'65	Sweden.
—	—	—	2'76	—	—	—	—	—	—	—	2'92	Switzerland.
3'35††	—	—	—	—	—	3'45‡‡	—	—	—	—	—	United States.
2'20‡	—	—	—	—	—	2'40	—	—	—	—	—	TOTAL FOR FOREIGN COUNTRIES.
1'85‡‡	—	—	—	—	—	2'01	—	—	—	—	—	TOTAL for the WORLD.

† Including accidents at Smelting Works.

‡ This death-rate represents the persons insured in the mining and smelting branch of the German Official Insurance Association.

For true mining death-rates in Prussia see p. 415.

†† The figures relate to 20 of the principal coal-producing States.

‡‡

§§ Information for ore mines incomplete, see p. 469.





## BRITISH EMPIRE.

## GREAT BRITAIN AND IRELAND

WITH THE

## ISLE OF MAN.

The following Tables, 287 to 292, summarize the results of Parts II. and III. of the General Report :—

TABLE 287.

PERSONS EMPLOYED at all the MINES during the Years 1904 and 1905.

Year.	Total Number of Mines at Work.	Under-ground.			Above-ground.			Total Under and Above Ground.
		Males.	Females.	Total.	Males.	Females.	Total.	
1904 .. ...	4,006	698,967	None	698,967	172,342	5,748	178,090	877,057
1905 ... ..	3,940	708,398	None	708,398	172,972	6,154	179,126	887,524
Increase or decrease ...	- 66	+ 9,431	—	+ 9,431	+ 630	+ 406	+ 1,036	+ 10,467

TABLE 288.

PERSONS EMPLOYED at QUARRIES more than 20 feet deep during the Years 1904 and 1905.

Year.	Total Number of Quarries at Work.	INSIDE THE QUARRIES, i.e., inside the actual pits, holes, or excavations.			OUTSIDE THE QUARRIES, i.e., outside the actual pits, holes, or excavations.			Total Number of Persons Employed Inside and Outside the Quarries.
		Males.	Females.	Total Inside.	Males.	Females.	Total Outside.	
1904 ... ..	7,507	62,244	5	62,249	35,391	37	35,328	97,577
1905 ... ..	7,513	59,978	None	59,978	34,809	32	34,841	94,819
Increase or decrease	+ 6	- 2,266	- 5	- 2,271	- 482	- 5	- 487	- 2,758



GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—continued.

TABLE 289.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, and other WORKINGS.\*

Mineral.	1904.			1905.		
	Quantity.		Value at the Mines and Quarries.	Quantity.		Value at the Mines and Quarries.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Alum shale ... ..	6,532	6,637	980	7,131	7,245	1,609
Arsenic ... ..	976	992	5,719	1,528	1,553	7,493
Arsenical pyrites ... ..	46	47	151	641	651	155†
Barytes ... ..	26,327	26,749	24,673	29,063	29,529	29,618
Bauxite ... ..	8,700	8,839	2,639	7,300	7,417	1,925
Bog ore ... ..	4,543	4,616	1,136	3,205	3,256	801
Chalk... ..	4,438,728	4,509,959	181,057	4,535,584	4,608,389	196,480
Chert and Flint ... ..	65,256	66,303	14,697	70,677	71,811	14,433
Clay ... ..	15,948,915	16,204,867	1,772,020	15,184,764	15,377,630	1,763,008
Coal ... ..	232,428,272	236,158,188	83,851,784	236,128,936	239,918,239	82,038,553
Copper ore ... ..	5,276	5,361	14,172	6,903	7,014	21,796
Copper precipitate ... ..	189	192	3,780	250	254	10,900
Fluor spar ... ..	18,160	18,451	15,464	59,446	40,079	19,557
Gold ore ... ..	23,203	23,575	68,576	15,981	16,237	17,787
Gravel and Sand ... ..	2,239,593	2,275,533	166,189	2,241,620	2,277,593	170,205
Gypsum ... ..	264,005	237,760	72,868	255,508	259,608	124,253
Igneous Rocks ... ..	5,988,821	6,084,927	1,351,139	5,956,900	6,052,494	1,288,344
Iron ore ... ..	13,774,362	13,995,366	3,125,814	14,590,703	14,824,849	3,483,184
Iron pyrites ... ..	10,287	10,452	5,300	12,186	12,382	4,789
Lead ore ... ..	26,374	26,797	206,238	27,649	28,093	244,752
Limestone (other than Chalk) ... ..	12,043,135	12,236,396	1,969,610	12,501,780	12,702,404	1,410,526
Manganese ore ... ..	8,756	8,897	4,370	14,474	14,706	11,634
Mica ... ..	7,140	7,255	2,996	11,640	11,827	3,858
Natural gas ... ..	c. ft. 774,800	c. mts. 21,938	155	—	—	—
Ochre, Umber, &c. ... ..	16,050	16,308	18,242	16,237	16,498	15,462
Oil shale ... ..	2,333,062	2,370,502	554,346	2,496,785	2,536,852	593,334
Petroleum ... ..	—	—	—	46	47	69
Phosphate of lime ... ..	58	59	87	—	—	—
Salt ... ..	1,891,633	1,921,989	596,785	1,889,910	1,920,239	556,437
Sandstone ... ..	5,306,363	5,391,517	1,717,970	5,640,684	5,731,203	1,634,357
Silver ore ... ..	35	36	1,782	14	14	306
Slate ... ..	563,170	572,208	1,678,726	514,524	522,731	1,466,916
Sulphate of strontia ... ..	18,169	18,461	17,260	14,294	14,523	13,936
Tin ore (dressed) ... ..	6,742	6,850	479,633	7,201	7,317	574,183
Uranium ore ... ..	—	—	—	103	105	†
Wolfram ... ..	161	164	14,369	172	175	11,357
Zinc ore ... ..	27,655	28,099	137,012	23,909	24,293	139,806
Total values ... ..	—	—	97,477,639	—	—	95,870,723

\* This table does not include the produce of quarries less than 20 feet deep except in the case of bog ore, iron ore, ochre, phosphate of lime, sulphate of strontia, and tin ore.  
† Value of 141 tons only.  
‡ Value not stated.

## GREAT BRITAIN AND IRELAND, WITH THE ISLE OF MAN—continued.

TABLE 290.

SUMMARY of the METALS obtainable by SMELTING from the ORES in the preceding TABLE.

Metal.	1904.			1905.		
	Quantity.		Value at the Average Market Price.	Quantity.		Value at the Average Market Price.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Aluminium ... ..	(a)	—	—	(a)	—	—
Copper ... ..	493	501	31,065	716	727	53,393
Gold (Bar) ... ..	ozs. 19,655	kilos. 611	73,925	ozs. 5,797	kilos. 180	21,222
Iron ... ..	4,524,412	4,597,018	13,218,195	4,760,187	4,836,577	14,992,363
Lead ... ..	19,838	20,156	239,544	20,646	20,977	286,377
Silver ... ..	ozs. 159,689	kilos. 4,967	17,549	ozs. 167,569	kilos. 5,212	19,419
Sodium ... ..	(a)	—	—	(a)	—	—
Tin ... ..	4,132	4,198	530,566	4,468	4,540	611,603
Zinc ... ..	10,263	10,428	237,546	8,880	9,023	230,880
Total values ... ..	—	—	14,348,390	—	—	16,245,262

(a) Information not supplied.

TABLE 291.

FATAL ACCIDENTS and DEATHS at all the MINES during the Years 1904 and 1905.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate from Accidents.		
	Under- ground.	Above- ground.	Total.	Under- ground.	Above- ground.	Total.	Per 1,000 Persons employed Under- ground.	Per 1,000 Persons employed Above- ground.	Per 1,000 Persons employed Under and Above Ground
1904 ... ..	901	147	1,048	942	148	1,090	1·35	·83	1·24
1905 ... ..	877	129	1,006	1,076	129	1,205	1·52	·72	1·36
Increase or decrease ...	— 24	— 18	— 42	+ 134	— 19	+ 115	+ ·17	— ·11	+ ·12

TABLE 292.

DEATHS from ACCIDENTS at QUARRIES\* during the Years 1904 and 1905.

Year.	Number of Separate Fatal Accidents.			Number of Deaths from Accidents.			Death-rate per 1,000 Persons employed.		
	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.	Inside the Quarries.	Outside the Quarries.	Total.
1904 ... ..	94	16	110	96	16	112	1·54	·45	1·15
1905 ... ..	83	14	97	85	14	99	1·42	·40	1·04
Increase or decrease ...	— 11	— 2	— 13	— 11	— 2	— 13	— ·12	— ·05	— ·11

\* More than 20 feet deep

BRITISH COLONIES AND DEPENDENCIES.

Aden.

Salt is made by the evaporation of sea-water, and the Government revenue is partly obtained from duty upon this product.

TABLE 293.

	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
Salt* ... ..	Statute Tons. 66,007	Metric Tons. 67,066	£ 24,679	Statute Tons. 99,727	Metric Tons. 101,327	£ 34,077

Australia.

The principal mineral product of the Commonwealth of Australia is gold. The output in 1905 was 3,663,239 ozs. (113,941 kils.) of fine gold, or roughly speaking one-fifth of the total quantity raised in the world. The most productive of the six States is Western Australia, with an output slightly under two million ounces of fine gold or considerably more than twice as large as that of any one of its sisters. These in order of production may be arranged as follows :—Victoria, Queensland, New South Wales, Tasmania, and South Australia.

The Commonwealth produced nearly 7½ million tons of coal in 1905 ; about 88 per cent. of the total was furnished by New South Wales.

Tasmania is still the principal copper producing State, due mainly to the yield of the Mount Lyell district. New South Wales, Queensland and South Australia, come next in order of importance.

The famous mines at Broken Hill in New South Wales produce far more silver lead ore than all the other five States put together.

Full details concerning each individual State will be found under its own special heading.

TABLE 294.

PERSONS EMPLOYED at all MINES† in the COMMONWEALTH of AUSTRALIA during the Years 1904 and 1905.

State.	1904.			1905.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
New South Wales	‡	‡	37,837	‡	‡	38,932
Queensland ...	‡	‡	15,398	‡	‡	17,587
South Australia ...	‡	‡	7,397	‡	‡	7,688
Tasmania ... ..	‡	‡	6,194	‡	‡	6,581
Victoria ... ..	‡	‡	25,007	‡	‡	26,120
Western Australia	9,337	10,278	19,615	9,456	9,886	19,342
Total ... ..	—	—	111,448	—	—	116,250

\* Records of the Geological Survey of India. Vol. xxxiv., Part 2, 1906. Calcutta.

† Including persons employed at alluvial gold workings.

‡ Not stated.



## AUSTRALIA—continued.

TABLE 295.

QUANTITY and VALUE of MINERAL produced in the COMMONWEALTH OF AUSTRALIA during the Years 1904 and 1905.

Mineral.	1904.*			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Alunite ... ..	370	376	925	2,702	2,745	6,750
Antimony and Antimony Ore.	129	131	663	437	443	5,747
Bismuth ... ..	40	41	12,344	79	80	23,521
" Ore ... ..	20	20	3,581	15	15	5,368
Bluestone ... ..	20,509	20,838	4,263	32,151	32,667	4,753
Brown Coal ... ..	—	—	—	50	51	25
Chrome Iron Ore ...	397	403	1,268	52	53	62
Clays ... ..	—	—	†	—	—	†
Coal ... ..	6,853,224	6,963,202	2,350,812	7,495,956	7,616,248	2,337,479
Cobalt ... ..	5	5	60	—	—	—
Coke ... ..	171,006	173,750	110,692	162,961	165,576	100,306
Copper ... ..	26,018	26,434	1,622,799	32,701	33,226	2,166,746
" Ore, Matte and Regulus.	9,615	9,770	96,937	4,604	4,678	92,372
Diamonds ... ..	carats 14,296	grams 2,936	11,620	carats 6,354	grams 1,305	3,745
Gems, other than opal ...	—	—	10,575	—	—	5,255
Gold (Fine) ... ..	ozs. 3,752,827	kilos. 116,725	15,940,977	ozs. 3,663,239	kilos. 113,941	15,560,442
Granite ... ..	350	356	750	1,200	1,219	120
Graphite ... ..	—	—	—	32	33	272
Gypsum ... ..	3,620	3,678	1,905	974	990	330
Infusorial Earth ... ..	—	—	—	48	49	192
Iron Ore ... ..	11,264	11,445	4,634	10,642	10,813	6,200
" Oxide of ... ..	415	422	239	542	551	417
Ironstone, Flux ... ..	56,790	57,701	34,296	94,497	96,014	54,387
Lead Ore ... ..	—	—	—	1,040	1,057	369
Lead, Pig ... ..	13,281	13,404	153,694	5,362	5,448	70,340
Limestone ... ..	113,146	114,962	56,075	113,607	115,430	34,734
Manganese Ore ... ..	830	843	3,540	1,517	1,541	5,925
Molybdenite ... ..	48	48	5,597	82	83	11,003
Oil Shale ... ..	37,871	38,479	26,770	38,226	38,839	21,247
Opal ... ..	—	—	60,550	—	—	62,000
Platinum ... ..	ozs. 535	kilos. 17	1,070	ozs. 398	kilos. 12	825
Plumbago ... ..	cwt. 1	kilos. 51	2	—	—	—
Porphyry ... ..	35,216	35,781	1,394	109,534	111,292	13,176
Salt (refined) ... ..	—	—	—	40,437	41,086	68,368
Salt ... ..	42,737	43,423	14,053	46,420	47,165	23,440
Sandstone ... ..	3,054	3,103	827	12,251	12,448	1,236
Scheelite ... ..	16	16	1,481	142	144	10,452
Silver ... ..	ozs. 2,204,174	kilos. 68,558	244,416	ozs. 1,426,031	kilos. 44,354	171,376
Silver Lead Ore ... ..	448,525	455,723	2,147,373	516,814	525,108	2,690,047
Tantalite ... ..	—	—	—	73	74	10,515
Tin Ingots ... ..	3,139	3,189	392,188	804	817	112,166
" Ore ... ..	6,036	6,136	420,086	10,042	10,202	841,735
Volcanic Ash ... ..	Not stated	—	Not stated.	39,816	40,455	3,152
Wolfram ... ..	1,671	1,697	173,938	1,590½	1,617	112,984
Zinc Ore ... ..	59,534	60,489	119,960	103,532	105,193	221,155
Sundries (including some Building Stone).	—	—	377,434	—	—	414,568
Total ... ..	—	—	24,409,788	—	—	25,275,302

\* Revised figures.

† Value included with Sundries.



## AUSTRALIA—continued.

TABLE 296.

ACCIDENTS at all MINES in the COMMONWEALTH of AUSTRALIA during the Years 1904 and 1905.

State.	1904.		1905.	
	Number of Deaths from Accidents.	Death-rate per 1,000 persons employed.	Number of Deaths from Accidents.	Death-rate per 1,000 persons employed.
New South Wales ... ..	41	1·08	56	1·44
Queensland ... ..	31	2·01	24	1·36
South Australia ... ..	2*	1·48*	4	·52
Tasmania ... ..	9	1·45	7	1·06
Victoria ... ..	19	·76	22	·84
Western Australia ... ..	42	2·38†	34	1·91†
Total ... ..	144	1·39	147	1·26

## NEW SOUTH WALES.‡

Coal and the ores of copper, gold, lead and silver are the principal minerals worked in this State.

*Coal.*—The existence of seams of coal was known in very early days and was the reason for the name of the State. It is reckoned that New South Wales has altogether yielded 122,393,863 tons of coal, valued at £48,019,516 of which more than 120 millions have been obtained since 1857. The output did not reach one million tons annually till the year 1872; last year it exceeded 6½ millions. Over 2 million tons were exported to Australian Ports, and over 1½ millions to places outside the Commonwealth, leaving nearly 3 millions available for home consumption.

Excluding lignite and seams of Triassic age, it is reckoned that the main coal-bearing rocks of the Colony extend over an area of 24,000 to 28,000 square miles around the seaport of Sydney.

*Copper.*—There was an increase of £105,753 in the value of the copper produced from ores raised in the State in 1905 as compared with the year 1904. The output from the Great Cobar copper mine, which is the principal copper mine of the State, was much in excess of that of any previous year.

*Diamonds.*—Diamonds are found in several parts of the Colony. In 1905 the largest gem-stone yet discovered in New South Wales, weighing 28½ carats, was found at Mount Werong, near Oberon.

*Gold.*—The quantities of gold in Table 298 relate only to metal obtained from ores mined in the State. There was an increase of 3,751 ozs. of crude gold in the output of 1905 compared with 1904. The most important gold-yielding districts during the year were Bathurst, Cobar, Lachlan, Mudgee, Peel and Uralla, Southern, and Tumut and Adelong. The Cobar field produced 54,237 ozs. of the total output of 274,267 ozs. of fine gold.

Dredging for gold made steady progress in 1905. There were several "bucket" and "suction" dredges at work during the year, and the quantity obtained thereby was 35,388 crude ozs. or 32,038 ozs. of fine gold. The chief centre of the gold-dredging operations is still in the Araluen Division, where 16,358 ozs. were obtained in 1905.

*Silver and lead.*—The ores of silver and silver-lead show an increased value of £428,512 in 1905. The silver and lead mining of the Colony is practically concentrated at Broken Hill, in the Albert Mining District.

*Tin ore.*—The chief supply of tin ore is obtained from the stanniferous gravels. 532 tons, valued at £50,904, were obtained by means of dredging during the year. The Tingha and Inverell Divisions are at present the most important tin-mining centres, and the yield therefrom in 1905 valued at £110,239 considerably exceeded that of the previous year, when it only reached £59,769.

\* For Northern Territory only.

† Exclusive of alluvial gold workers.

‡ Annual Report of the Department of Mines for 1905. Sydney, 1906.

AUSTRALIA.—NEW SOUTH WALES—continued.

TABLE 297.

PERSONS EMPLOYED at all MINES during the Years 1904 and 1905.\*

Kind of Mines.	1904.			1905.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	11,122	2,922	14,034	11,054	2,965	14,019
Copper ... ..	—	—	1,850	—	—	2,171
Gold { alluvial ...	—	—	5,253†	—	—	5,091‡
	quartz ...	—	5,395	—	—	5,218
Shale ... ..	72	40	112	77	41	118
Silver, Lead and Zinc.	—	—	7,071	—	—	7,887
Tin... ..	—	—	2,745‡	—	—	2,884
Other mines ...	—	—	1,377	—	—	1,544
Total ... ..	—	—	37,837	—	—	38,932

TABLE 298.

QUANTITY and VALUE of MINERALS produced during the Years 1904 and 1905.§

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alunite ... ..	370	376	925	2,702	2,745	6,750
Antimony and Antimony ore ...	109	111	503	388	394	5,221
Bismuth ... ..	40	41	12,329	55	56	20,763
Chrome iron ore ... ..	397	403	1,268	52	53	62
Coal ... ..	6,019,809	6,116,412	1,994,952	6,632,138	6,738,568	2,003,461
Cobalt ... ..	5	5	60	—	—	—
Coke ... ..	171,006	173,750	110,892	162,961	165,576	100,306
Copper (ingots) ... ..	6,501††	6,805††	361,441††	7,775	7,900	507,661
„ (ore and regulus)... ..	2,431††	2,470††	44,560††	482	490	4,098
Diamonds ... ..	carats 14,296	grams 2,936	11,620	carats 6,354	grams 1,305	3,745
Gold (fine)  ... ..	ozs. 269,817	kilos. 8,392	1,146,109	ozs. 274,267	kilos. 8,531	1,165,013
Ironstone flux¶ ... ..	8,661	8,800	6,628	6,801	6,910	4,525
Iron, oxide of (exported) ... ..	415	422	239	542	551	417
Lead (pig)** ... ..	5,883	5,977	65,964	210	213	2,657

\* Annual Report of the Department of Mines for 1904, pp. 4 and 94 ; and for 1905, pp. 4 and 95.  
† Including 595 Chinese.  
‡ 305  
§ Annual Report of the Department of Mines for 1904, pp. 2, 9, 43, and 47.  
|| The quantities of crude gold were 324,996 ozs. in 1904, and 328,747 ozs. in 1905.  
¶ Used for metallurgical works.  
\*\* See footnote on p. 306 as to total quantity of metallic lead.  
†† Corrected figures.



AUSTRALIA.—NEW SOUTH WALES—continued.

TABLE 298—continued.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Limestone (flux) ... ..	24,975	25,376	14,434	14,941	15,181	9,519
Molybdenite ... ..	25	25	2,726	19	19	2,507
Oil shale ... ..	37,871	38,479	26,770	38,226	38,839	21,247
Opal ... ..	—	—	57,000	—	—	59,000
Platinum ... ..	ozs. 535	kilos. 17	1,070	ozs. 398	kilos. 12	825
Scheelite ... ..	15	15	1,406	138	140	10,122
Silver (ingots and matte)* ...	ozs. 1,121,402	kilos. 34,879	123,256	ozs. 417,520	kilos. 12,986	52,196
Silver lead and ore* ... ..	397,220	403,594	1,942,284	441,447	448,531	2,441,856
Tin (ingots) ... ..	1,068	1,085	136,960	804	817	112,166
„ ore ... ..	576	588	47,825	715	726	61,640
Wolfram ... ..	89	90	8,432	86½	88	7,361
Zinc (Metal and concentrates)*...	57,603	58,527	117,978	103,532	105,193	221,155
Sundry minerals (including building stone, &c.).	—	—	70,237	—	—	107,979
Total value ... ..	—	—	6,307,668†	—	—	6,932,247

TABLE 299.

DEATHS from ACCIDENTS at all MINES during the Years 1904 and 1905.‡

Kind of Mines or Workings.	1904.		1905.	
	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.	Number of Deaths from Accidents.	Death-rate per 1,000 Persons Employed.
Coal and shale ... ..	12	·85	24	1·70
Gold { alluvial & dredging	4	·76	2	·39
{ quartz ... ..	7	1·30	8	1·53
Silver Lead and Zinc ... ..	14	1·98	20	2·54
Other mines... ..	4	·67	2	·30
Total ... ..	41	1·08	56	1·44

TABLE 300.

DEATHS from ACCIDENTS at COAL and SHALE MINES during the Years 1904 and 1905.§

Year.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
1904 ... ..	12	—	12	1·07	—	·85
1905 .. ..	22	2	24	1·98	·67	1·70

\* The total metallic contents of the ores of Lead, Silver, and Zinc raised in the state during the year are given on pages 34 and 35 of the Annual Report of the Department of Mines for 1905 as follows:—Fine Silver 10,285,495ozs., Lead 162,226 tons, Zinc 31,181 tons.  
† Corrected figures.  
‡ Annual Report of the Department of Mines for 1904, pp. 5 and 64, and 1905, pp. 5, and 67.  
§ " " for 1904, p. 101, and for 1905, p. 99.

AUSTRALIA.—NEW SOUTH WALES—*continued.*

The following table (No. 301) gives the number of cases of lead-poisoning at the Broken Hill Mines which have been reported during the past ten years. There was a considerable diminution in the number of cases reported in 1905 as compared with the figures for the three preceding years.

TABLE 301.  
BROKEN HILL MINES.\*

Year.	Number of Persons Employed.	Cases of Lead Poisoning Reported.	Percentage of Persons Affected.
1896	5,400	44	·81
1897	5,816†	17	·29†
1898	6,003†	14	·23†
1899	7,252	13	·18
1900	7,392†	5	·07
1901	5,610†	13	·23†
1902	4,983	56	1·12
1903	5,626†	40	·71†
1904	6,758	26	·38
1905	7,407	11	·15

In addition to the above cases of lead poisoning which occurred amongst the men employed in the mines, the following are reported as having happened to persons engaged at the metal works, viz. : 69 in the year 1899 ; 58 in 1900 ; 2 in 1903 ; and 3 in 1904. The number of cases is not given for 1905, as it has recently been decided that metal works are not subject to the provisions of the Mines Inspection Act, 1901, consequently the existing lead-poisoning regulations do not apply to them.

*Legislation.*—The following Act relating to mining was passed during the year :—

No. 25. "The Coal Mines Regulation (Amending) Act, 1905," which provides for the granting of Certificates of Competency and Service to duly qualified winding-engine drivers. Any person not registered as the holder of a certificate who after a period of six months from the passing of the Act is found acting as the driver of a colliery winding-engine in the State will be liable to a penalty.

## QUEENSLAND.‡

The total value of mineral output of Queensland for 1905 exceeds that of the preceding year by £36,491, and is due to a large increase in the output of Copper. Gold and Silver show a decreased production.

*Copper.*—Compared with the year 1904, the output of copper in 1905 has increased 65 per cent. The greater part of the ore obtained at present is raised in the Heberton District.

*Gold.*—The value of the yield was £2,517,295 a decrease on that of the previous year of £197,639.

Charters Towers maintained its position as the most productive field in Queensland with an output of 324,581 ozs. of crude or 226,696 ozs. fine gold in 1905 ; Mount Morgan comes next with a production of 140,694 ozs. crude or 125,960 ozs. fine, and the Gympie, Kilkivan, Glastonbury, &c., goldfield third with 140,732 ozs. crude or 116,342 ozs. fine.

*Manganese Ore.*—Although considerable quantities of low grade manganese ore exist in the Gladstone, Rockhampton, Bundaberg, Ipswich and Warwick Districts, the production at the present time is confined to the Mount Miller Mine at Gladstone.

*Tin Ore.*—The Heberton mineral field continues to be the main source of supply, and last year furnished 2,975 tons, or more than two-thirds of the total quantity obtained.

\* Annual Report of the Department of Mines for 1905, p. 68.

† Revised figures.

‡ Annual Report of the Under-Secretary for Mines for 1905. Brisbane, 1906.

AUSTRALIA.—QUEENSLAND—continued.

Wolfram.—The State now ranks as one of the principal sources of the world's supply of Wolfram. The bulk of the ore obtained in 1905 came from the Herberton and Hodgkinson districts.

TABLE 302.  
PERSONS EMPLOYED at MINES during the Years 1904 and 1905.\*

Kind of Mines.					1904.	1905.
Coal	...	...	...	...	1,336	1,432
Gold	{	alluvial	...	...	2,002†	1,759†
		vein	...	...	7,618	8,882
Other mines		...	...	...	4,442	5,514
Total	...	...	...	...	15,398	17,587

TABLE 303.  
QUANTITY and VALUE of MINERALS produced during the Years 1904 and 1905.‡

Mineral.	1904.††			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Antimony ore	—	—	—	24	24	174
Bismuth ore	20	20	3,581	15	15	5,368
Bismuth, Wolfram, and Molybdenite.	22	22	2,746	21	21	1,958
Coal	512,015	520,232	166,536	529,326	537,820	155,477
Copper	4,370	4,440	257,896	7,221	7,337	503,547
Gems, other than Opal	—	—	10,575	—	—	5,255
Gold (fine)¶	oss. 639,151	kilos. 19,880	2,714,934	oss. 592,620	kilos. 18,433	2,517,295
Graphite	—	—	—	32	33	273
Iron ore ¶	4,424	4,495	1,659	4,842	4,412	3,600
Lead	2,046	2,079	24,560	2,422	2,461	33,212
Manganese ore	830	843	3,540	1,517	1,541	5,925
Molybdenite	21	21	2,673	63	64	8,496
Opal	—	—	3,550	—	—	3,000
Scheelite	1	1	75	4	4	330
Silver	oss. 654,929	kilos. 20,370	71,858	oss. 601,712	kilos. 18,715	69,176
Stone** :—						
Bluestone	20,509	20,838	4,263	32,151	32,667	4,753
Granite	350	356	750	1,200	1,219	120
Limestone	12,561	12,763	3,063	19,966	20,286	3,341
Limestone¶	¶18,773	19,074	10,820	25,057	25,459	15,863
Porphyry	35,216	35,781	1,394	109,534	111,292	13,176
Sandstone	3,054	3,103	827	12,251	12,448	1,236
Volcanic Ash	Not stated.	—	Not stated.	39,816	40,455	3,152
Other	31,202	31,703	1,985	60,742	61,717	3,634
Tin ore (dressed)	3,923	3,988	270,276	3,945	4,008	297,454
Wolfram	1,539	1,564	161,635	1,409	1,432	99,873
Total value	—	—	3,719,196	—	—	3,755,687

\* Annual Report of the Under Secretary for Mines for the year 1905, Brisbane, 1906, pp. 21 and 22.

† Including 521 Chinese.

‡ 547

§ Op. cit., pp. 16A, 18 and 20.

¶ The quantities of crude gold were 877,238 oss. in 1904 and 824,786 oss. in 1905.

¶ Used principally for fluxing purposes.

\*\* Statistics of Queensland for 1905, Brisbane, 1906.

†† Revised figures.



AUSTRALIA.—QUEENSLAND—*continued.*

TABLE 304.

DEATHS FROM ACCIDENTS AT MINES during the Years 1904 and 1905.\*

Kind of Mines.	1904.		1905.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal ... ..	1	·75	1	·70
Gold ... ..	26	2·70	16	1·50
Other mines ...	4	·90	7	1·27
Total ... ..	31	2·01	24	1·36

## SOUTH AUSTRALIA.†

During the year ended 30th June, 1906, 6,450 persons were engaged in mining in South Australia proper, and principally for copper and gold. Of the 1,238 persons engaged in mining in the Northern Territory, nearly 87 per cent. were Chinese.

*Copper.*—Copper ore is by far the most important mineral of this State. The greater part of the output in 1905 was obtained from mines in Yorke's Peninsula in South Australia proper.

*Gold.*—Compared with that of the other Australian States, the output of gold is insignificant. The Government Resident states that the increased prices of tin and copper and the accessibility of these ores have drawn away the miners from gold mines in the Northern Territory, which accounts for the diminished output of gold for South Australia.

*Salt.*—The salt produced in 1905 was chiefly obtained from Yorke's Peninsula. The season during which the salt lakes are worked is from November to March, and about 450 persons are employed in the industry.

*Tin Ore.*—The tin is obtained from mines, lodes and alluvial deposits chiefly in the localities of Mount Wells, Dean's Camp, West Arm, Mount Todd, Horseshoe Creek, and Bynoe Harbour in the Northern Territory. The activity displayed during 1904 in prospecting and mining for tin was continued during the year 1905 with good results.

TABLE 305.

PERSONS EMPLOYED AT MINES AND QUARRIES during the Years 1904 and 1905.

	Average Number of Persons Employed in and about the Mines during the years	
	1904.	1905.
South Australia proper ... ..	6,050†	6,450§
Northern Territory... ..	1,347	1,238
Total ... ..	7,397	7,688

Of the above persons 4,637 were employed at copper mines, 1,390 at gold mines, 60 at silver-lead mines, 292 at tin mines, 450 at salt, and 859 at workings for other minerals in 1905.

\* *Annual Report of the Under-Secretary for Mines for the year 1904*, Brisbane, 1905, pp. 116 and 128.

† *Official Return furnished by Department of Mines*, Adelaide, Review of Mining Operations in the State of South Australia during the year ended 30th June, 1906, issued by the Department of Mines, Adelaide, and *Government Resident's Report on the Northern Territory for the year 1905*.

‡ Approximate.

§ For the year ended 30th June, 1906.

AUSTRALIA.—SOUTH AUSTRALIA—continued.

TABLE 306.

QUANTITY and VALUE of MINERALS produced during the Years 1904 and 1905.

Mineral.	1904.			1905		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Copper ... .. (exported)	6,564*	6,869	406,506	6,706*	6,814	494,985
Copper ore ... ..	3,111*	3,161	25,557	2,971*	3,019	35,340
Gold (fine)† ... ..	ozs. 29,108*	kilos. 905	128,648	ozs. 20,330*	kilos. 632	86,356
Iron ore for fluxing ... ..	46,687	47,436	27,091	84,483	85,839	48,577
Lead Ore ... (exported)	—	—	—	1,040	1,057	369
Limestone for fluxing ... ..	43,440	44,137	26,059	44,498	45,212	4,791
Molybdenite ... ..	2	2	198	—	—	—
Salt (crude) ... ..	40,000‡	40,642	12,000§	32,500	33,022	13,000
Salt (refined) ... (exported)	—	—	—	40,437	41,086	68,368
Silver matte ... ..	—	—	—	ozs. 14,455	kilos. 450	1,626
Silver lead ore... ..	167*	170	1,387	97*	99	1,115
Tin ore ... ..	366*	374	27,085	288*	293	21,972
Wolfram ... ..	28*	28	2,724	63*	64	3,379
Unenumerated ore ... ..	—	—	—	—	—	1,377
Total value ... ..	—	—	652,255§	—	—	721,255

Three fatal accidents are reported to have occurred in South Australia proper, and one fatal accident in the Northern Territory, in 1905. The total death-rate per 1,000 persons employed was .52 as against .95 in 1904.

TASMANIA.||

Tasmania, though a small island, has important mineral resources. A large proportion of the mineral wealth is still imperfectly developed, owing to the population not having extended to the remote parts of the island. In 1905, bismuth, copper, gold, silver-lead, tin and wolfram show an increased output compared with the preceding year.

*Coal.*—Although the present output is only slightly over 50,000 tons, there are abundant seams of marketable coal in the country belonging to the Permo-carboniferous and Mesozoic measures, ranging from 20 inches to 12 feet in thickness. Seams of kerosene shale and gas-coal occur near Table Cape on the North-west Coast, but the means of communication with the port delay the development of them. Brown coal and lignite occur all along the North Coast.

*Copper.*—The centre of the copper mining industry is in the Lyell district, but copper and gold ores are known to exist in the mountain ranges south of this district. The principal copper mine in the colony is the Mount Lyell, which last year produced 8,610 tons of blister copper containing 8,506 tons of copper, 732,019 ozs. of silver and 24,477 ozs. of fine gold. The Lyell Blocks Company are working a valuable deposit of clay, containing native copper.

\* Including output of Northern Territory.  
+ The quantities of crude gold were 34,079 ozs. in 1904 and 24,010 ozs. in 1905.  
† Estimated.  
§ Revised figures.  
|| Official Return furnished by the Department of Mines, Hobart.



AUSTRALIA.—TASMANIA—continued.

*Gold.*—In the eastern part of Tasmania a broad zone of slate and sandstone strata, traversed by gold-bearing quartz, extends in a north and south direction from the North Coast to Mathinna and Fingal ; in this belt of country the principal gold mines are situated. The Tasmania Gold Mine at Beaconsfield and the New Golden Gate Mine at Mathinna, with shafts sunk 1,100 and 1,600 feet respectively, are, at present, the most important gold mines worked in the State ; the former has, since it first started working, yielded 628,816 ozs. of gold.

*Lead and Silver.*—Silver-lead mining is confined to the western and north-western parts of the island. The bulk of the ore obtained at Zeehan comes from the Mount Zeehan, Montana, and Western Mines. The Tasmanian Smelting Co. during the twelve months ended 31st December, 1905, treated 39,743 tons of ore, containing 9,028 tons of lead, 1,359,267 ozs. of silver, and 1,867 ozs. of gold. The Magnet Mine is the principal producer in the North-western district.

*Tin.*—The rise in the price of this metal has resulted in more work being done in 1905 on the alluvial and lode deposits of tin in every part of the State. The value of the ore produced during the year amounted to £362,670 ; Mount Bischoff, one of the largest tin mines in the world, was the principal producer. Alluvial tin is largely obtained from ancient river beds at the Briseis, Arba, and Pioneer Mines.

*Iron Ore.*—Extensive deposits of iron ore exist at Blyth River, Savage River, the Meredith Range, and Mount Heemskirk, but are at present unworked. The Tasmanian Iron Co. obtained a few thousand tons of Hæmatite ore from its mine near the Penguin on the North-west Coast in 1905.

*Wolfram.*—32 tons of ore were raised and shipped from mines on Ben Lomond and from the Middlesex district during the year.

TABLE 307.

PERSONS EMPLOYED at the MINES during the Years ended 31st December 1904 and 1905.

	1904	1905.
	6,194	6,581

TABLE 308.

QUANTITY and VALUE of the MINERALS produced during the Years ended 31st December 1904 and 1905.

Description of Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons. cwts. 6	Metric Tons. kilos. 305	£ 15	Statute Tons. cwts. 70	Metric Tons. kilos. 3,556	£ 800
Bismuth ... ..						
Coal .. ...	61,109	62,090	51,942	51,993	52,827	44,194
Copper (blister)* ... ..	8,371	8,505	582,540	8,610	8,748	704,287
„ (matte) ... ..	—	—	—	—	—	—
„ (native) ... ..	212	215	14,416	1,151	1,169	52,939
„ ore ... ..	104	106	1,640			
Flux ore ... ..	9,869	10,027	4,697	—	—	—
Gold (Fine) ... ..	ozs. 65,921	kilos. 2,050	280,015	ozs. 73,540	kilos. 2,288	312,380
Iron ore ... ..	6,840	6,950	2,975	6,300	6,401	2,600

\* Value of the gold contained in the blister copper has been deducted.



AUSTRALIA—TASMANIA—continued.  
TABLE 308—continued.

Description of Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Silver lead ore ... ..	51,138	51,959	203,702	75,270	76,478	246,888
Tin (exported) ... ..	2,071	2,104	255,228	3,891	3,953	362,670
Tin ore (exported) ... ..	245	249	10,893			
Wolfram ... ..	15	15	1,147	32	33	2,371
Zinc ore ... ..	1,931	1,962	1,982	—	—	—
Total value ... ..	—	—	1,411,192	—	—	1,729,129

TABLE 309.  
DEATHS from ACCIDENTS at MINES during the Years ended 31st December 1904 and 1905.

	1904.		1905.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
	9	1·45	7	1·06

During the year a new Act (No. 23), entitled “The Mining Act, 1905,” was passed. It consists of 16 Parts, and deals amongst other matters with prospectors’ licences and miners’ rights, leases, water rights, timber rights, drainage of mines, deposit of tailings, and administration of justice by wardens. Three sets of general rules are scheduled in the Act : (1) for all mines ; (2) for collieries only ; and (3) for smelting works.

A code of 195 regulations under the above Act was published early in the year 1906.

VICTORIA.\*

*Coal.*—Victoria possesses large deposits of brown coal of Tertiary age. Up to the present time they have been little utilised. The output of black coal for 1905 was 155,135 tons, showing an increase of 33,394 compared with the quantity produced in 1904.

*Gold.*—The State with a yield of 747,166 ozs. of fine gold in 1905, stands second in the Commonwealth as a gold producer. It is true that the weight of its bar gold was less than that of Queensland ; but much of the gold from the latter colony has a comparatively low standard of fineness, so that when its output is reduced to fine gold it falls behind Victoria. On the 31st December, 1905, the shaft of New Chum Railway Company’s Mine, situated on the Bendigo goldfield, was 4,060 feet deep, and a winze 125 feet below this, making a total depth of 4,225 feet from the surface ; there were also 10 other companies whose mine shafts were over 3,000 feet in depth.

*Tin Ore.*—The bulk of the output of tin (124 tons) in 1905 was obtained by dredging and hydraulic sluicing by gravitation.

TABLE 310.  
PERSONS EMPLOYED at MINES during the Years 1904 and 1905.

	—	1904.	1905.
Coal ... ..		589	640
Gold ... ..		24,331	25,369
Other Mines ... ..		87	111
Total ... ..		25,007	26,120

\* Annual Reports of the Secretary for Mines for Victoria for 1904 and 1905, Melbourne 1905 and 1906.

## AUSTRALIA.—VICTORIA—continued.

TABLE 311.

QUANTITY and VALUE of the MINERALS produced during the Years 1904 and 1905.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons. 20	Metric Tons. 20	£	Statute Tons. 25	Metric Tons. 25	£
Antimony ore ... ..	—	—	160	—	—	352
Brown coal ... ..	—	—	—	50	51	25
Clays ... ..	—	—	—	—	—	—
Coal ... ..	121,741	123,695	70,208	155,135	157,625	79,035
Gold (fine)† ... ..	ozs. 765,600	kilos. 23,813	3,252,045	ozs. 747,166	kilos. 23,240	3,173,744
Gypsum ... ..	3,620	3,678	1,905	974	990	330
Infusorial earth ... ..	—	—	—	48	49	192
Salt (crude) ... ..	2,787	2,781	2,053	13,920	14,143	10,440
Silver (fine) ... ..	ozs. 28,653	kilos. 891	3,390	ozs. 32,600	kilos. 1,014	4,100
Tin ore ... ..	71	72	5,190	124	126	11,159
Building stone (Basalt, Limestone, Sandstone, Granite, &c.).	—	—	83,585	—	—	81,565
Other building materials, &c., Bricks, Pottery, Drain-pipes, Tiles, &c.	—	—	214,184‡	—	—	220,013
Total value ... ..	—	—	3,632,720‡	—	—	3,580,955

TABLE 312.

DEATHS from ACCIDENTS at MINES during the Years 1904 and 1905.

Kind of Mines.	1904.		1905.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal ... ..	2	3.40	2	3.12
Gold ... ..	17	.70	20	.79
Total ... ..	19	.76	22	.84

## WESTERN AUSTRALIA.§

The following minerals have been discovered in the State:—Aluminium, antimony, asbestos, bismuth, coal, cobalt, copper, diamonds, diatom earth, gold, graphite, guano, iron, lead, manganese, mica, silver, and tin.

*Coal.*—The output of the only coalfield, that at Collie, was 127,364 tons in 1905, a decrease of 11,186 tons compared with 1904.

*Copper Ore.*—The quantity produced during the year 1905 was only 2,389 tons, a decrease of 1,580 tons compared with the output of the preceding year. The decrease, which was chiefly in the Phillips River field, was, to some extent, due to the closing down of the State Smelting Works, prior to dismantling the plant, and the erection of a new furnace on a larger scale.

*Gold.*—The output of gold has decreased by about 1½ per cent. The average value of gold for the whole State per ton of ore milled was 58.51 shillings as against

\* The only figure available is that for manufactured goods *see* value for Bricks, &c.

† The quantities of crude gold were 821,017 ozs. in 1904, and 810,050 ozs. in 1905.

‡ Corrected figures.

§ Reports of the Department of Mines of Western Australia for the Years 1904 and 1905. Perth, 1906 and 1906.

AUSTRALIA.—WESTERN AUSTRALIA—continued.

66·20 shillings for the previous year. Nearly 56 per cent. of the gold was produced by the East Coolgardie Field, with a total output of 1,092,358 ozs.; next in importance comes the Murchison Field with 224,398 ozs., followed by the Mount Margaret Field with an output of 188,153 ozs. The North Coolgardie Goldfields produced 146,809 ozs.

The number of gold-producing mines in the State in 1905 was 1,199.

*Tin Ore.*—The output of Black tin for the year shows an increase of 224 tons, and the value an increase of £28,023 on the figures for 1904. The two producing districts are Greenbushes and Pilbarra.

TABLE 313.

PERSONS EMPLOYED at MINES, ALLUVIAL GOLD, and STREAM TIN WORKINGS during the Years 1904 and 1905.

Kind of Mines.	1904.			1905		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	283	75	358	261	90	351
Copper Ore ... ..	80	89	169	52	73	125
Gold {	8,922	7,926	16,848	9,074	7,758	16,832
		1,956	1,956		1,550	1,550
Tantalite ... ..	—	—	—	—	5	5
Tin ... ..	52	232*	284	69	410*	479
Total ... ..	9,337	10,278	19,615	9,456	9,886	19,342

TABLE 314.

QUANTITY and VALUE of the MINERALS produced during the Years 1904 and 1905.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal ... ..	138,550	140,773	67,174	127,364	129,408	55,312
Copper ore ... ..	3,969	4,033	25,180	2,389	2,427	16,266
Gold (fine)† ... ..	ozs. 1,983,230	kilos. 61,685	8,424,226	ozs. 1,955,316	kilos. 60,817	8,305,654
Ironstone for fluxing ... ..	1,442	1,465	577	3,213	3,265	1,285
Limestone ... ..	13,397	13,612	1,699	9,145	9,292	1,220
Pig Lead (exported)‡ ... ..	5,352	5,438	63,170	2,730	2,774	34,471
Plumbago ore (exported) ... ..	cwt. 1	kilos. 51	2	—	—	—
Salt (exported) ... ..	§	—	§	§	—	—
Silver (fine), (exported) ... ..	ozs. 399,190	kilos. 12,416	45,912	ozs. 359,744	kilos. 11,189	44,278
Tantalite ... ..	—	—	—	73	74	10,515
Tin ore (dressed) ... ..	855	869	58,817	1,079	kilos. 1,096	86,840
Total value ... ..	—	—	8,686,757	—	—	8,555,841

\* As the tin obtained is principally "stream tin" the average number of alluvial workers is included under the heading Above-ground.

† The quantity of crude gold in 1904 was 2,373,021 ozs., but that in 1905 is not given in the Report of the Department of Mines.

‡ Contained in Bullion.

§ Information not received.



AUSTRALIA.—WESTERN AUSTRALIA—*continued.*TABLE 315.  
DEATHS FROM ACCIDENTS AT MINES during the Years 1904 and 1905.

Kind of Mines.	1904.						1905.					
	Number of Persons Killed.			Death-rate per 1,000 Persons Employed.			Number of Persons Killed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	—	—	—	—	—	—	—	—	—	—	—	—
Gold ... ..	37	4	41	4.15	50*	2.43*	31	3	34	3.42	39*	2.02*
Other mines ... ..	1	—	1	7.58	—	2.21	—	—	—	—	—	—
Total for all mines	38	4	42	4.07	48*	2.38*	31	3	34	3.28	36*	1.91*

The Inspection of Machinery Act, 1904,† which supersedes the Steam Boiler Act, 1897, came into operation on the 1st March, 1905, and provides for the inspection of factory and mining machinery in addition to steam boilers, and for the granting of certificates to engine-drivers.

## West Indies. (See BARBADOS, DOMINICA, REDONDA and TRINIDAD.)

## Bahamas.‡

There are no mines in the Colony; but quarries are worked for soft limestone which is used locally and also exported.

Bay salt is produced in the Bahamas by the solar evaporation of sea water. The principal producers are Inagua, Rum Cay, Ragged Island, and Exuma. During the year 1905 the number of persons employed temporarily was about 248.

The output during the last two years was as follows:—

TABLE 316.

Year.	Quantity.		Value.
	Statute Tons.	Metric Tons.	
1904	1,570	1,595	£ 749
1905	2,403	2,441	1,041

## Barbados.§

The most important mineral product of the island is "manjak," a variety of glance pitch occurring in veins which traverse deposits of infusorial earth. About 212 men and boys and 7 women are employed at the mines where it is worked. The quantity exported in 1904 was 500 tons, valued at £5,012 and in 1905, 929 tons valued at £9,292. The greater portion of the supply is sent to the United States.

There are several wells yielding petroleum, and several quarries from which good building stone is obtained.

\* Exclusive of alluvial gold workers.

† Western Australia. Report of the Department of Mines for the year 1904. Perth, 1905, p. 35.

‡ Governor Grey-Wilson, "Bahamas Report for 1905-6," Colonial Reports—Annual No. 496, London, 1906 [Cd. 2684-42] pp. 11, 16 and 17, and Official Return furnished by the Colonial Secretary, Nassau.

§ Hodgson, "Barbados. Report for 1903" and Knaggs, "Barbados. Report for 1904-5," Colonial Reports—Annual No. 432, London, 1904 [Cd. 2238-9], pp. 8 and 11 and No. 466, London, 1905 [Cd. 2,684-12], p. 8 and Blue Book for Barbados for 1905-6.



**Basutoland.\***

No mining of any sort is carried on at present in Basutoland. Coal crops out in several places and was worked for a short time for local purposes, but as soon as mining difficulties arose the work ceased. There are indications in the Colony of iron, copper, and tin.

**Bechuanaland Protectorate.†**

Little is known about the mineral wealth of this country; though a small seam of good coal has been discovered close to the railway in the Northern Protectorate. Gold is found in the Tati district and work has been resumed at two or three of the mines there.

**British Borneo.**

**LABUAN.‡**

The Labuan Coalfields Company, Ltd., which purchased the Labuan Coalfields at the end of the year 1902, are now engaged in extensively developing a seam nine feet thick at Coal Point.

During the last three or four years all the coal produced has been sold at Victoria Harbour, Labuan, for steamships calling there for bunker supplies. The average selling price of the coal during the years 1904 and 1905 was 17s. 0d. per ton.

Between 400 and 500 Chinese, Malays, and Klings are employed in the mines at Coal Point, and from 50 to 60 in coaling operations at Victoria.

The quantities of coal produced in 1904 and 1905 were as follows:—

TABLE 317.

	Year.	Quantity.		Value.
		Statute Tons.	Metric Tons.	£
	1904	12,460	12,660	10,591
	1905	15,047	15,288	12,790

**NORTH BORNEO.§**

The existence of coal, copper, iron, manganese, gold, and other minerals has been proved; gold has from time immemorial been worked by the natives in the vicinity of Darvel Bay. Coal has been discovered in Marudu Bay, and the coalfield in the vicinity of Cowie Harbour has been proved to contain two workable seams. One of them, which is six feet six inches thick, has been traced along its outcrop for a distance of six miles, and mining operations have been commenced in the Tawao district, and local steamers are being supplied with the coal therefrom.

A very large deposit of iron ore, estimated at 25 million tons, has recently been discovered within 30–35 miles of the manganese deposits in Marudu Bay, and also one of superior quality, estimated at 1½ million tons, in the Labuk district.

Manganese ore was discovered in Marudu Bay in 1903, and the first shipment of ore took place early in October, 1906.

\* Sir Godfrey Lagden, *Jour. R. Col. Inst.*, Vol. xxxii., 1901, p. 462, and information furnished by the Government Secretary, Maseru.

† Lord Selborne "Bechuanaland Protectorate Report for 1904–1905." Colonial Reports—Annual, No. 479,—London, 1905 [Cd. 2684–25], p. 6.

‡ Information furnished by the Labuan Coalfields Company, Ltd.

§ Information furnished by the British North Borneo Company, and The Singapore and Straits Directory for 1906, Singapore, 1906, p. 383.



BRITISH BORNEO—*continued.*

## SARAWAK.\*

The known mineral resources of Sarawak are deposits of antimony ore, coal, diamonds, gold, and petroleum.

*Antimony.*—The Borneo Company has antimony works at Busoh in Upper Sarawak, and small shipments have been made owing to the advance in the value of the metal.

*Coal.*—The Government works two coal mines, one at Sadong, which produced 15,767 tons in 1904, and 19,958 tons in 1905, and the other at Brooketon, which produced 29,213 tons in 1904, and 22,836 tons in 1905.

*Diamonds.*—The gems are found in very small quantities.

*Gold.*—The Borneo Company, Ltd., is successfully extracting gold by the cyanide process from auriferous quartz, gravel and clay containing only about 5 dwts. per ton. The output of fine gold in 1905 was 45,641 ozs. as against 42,745 ozs. in the previous year.

## British Central Africa Protectorate.†

From the discoveries which have been made of coal, copper, gold, iron, lead, silver, &c., the Protectorate appears to be rich in mineral deposits, and a mineral survey is now (1906) being made which it is hoped will result in payable mineral industries eventually being established.

The coal is stated to be similar in character to the Gondwana coal of India. Specimens from Deep Bay, in the Karonga district, are reported as non-caking and of fair quality. It is estimated that in the West Shiré district the coalfields are 3,000 square miles in extent.

Copper ore exists in the Ruw, Lower Shiré, and Shiré Highlands districts.

There are deposits of auriferous quartz in the Shiré Highlands, but at present none of these have been proved to contain more than 5 dwts. of gold per ton.

Large deposits of bog iron ore are stated to exist in Northern Angoniland, and was formerly smelted on a large scale by the natives for the purpose of making hoes, axes and spears, but the introduction of foreign implements has to a large extent killed the native industry.

A lode of argentiferous galena has been found in Angoniland, which is stated to contain 81 per cent. of lead and 26 ozs. of silver per ton of ore.

Some samples of mineral ore from near Blantyre are reported to contain nickel similar to that at Sudbury, Ontario, Canada.

*Legislation.*—The British Central Africa Mining Ordinance, 1906, was passed on the 28th February, 1906. It provides for the appointment of a Director and of Inspectors of Mines, and relates to prospecting licences, mining and mineral leases, free transfer and assignment of mining interests, &c. A code of 38 rules under the Ordinance for the safe working of mines has also been published.

## British Columbia. (See under CANADA.)

## British East Africa Protectorate.‡

The mineral resources of the Protectorate have not yet been fully ascertained, but iron is known to occur abundantly in most districts, mica and graphite are to be found in Ukamba, limestone is worked near Kitui, Makindu, and Lake Victoria, opals are plentiful in the Rift Valley, a large deposit of carbonate of soda has been discovered in the southern part of Ukamba, and gold mining has been commenced, but discontinued.

\* Consul Hewett, "Trade and Commerce of Sarawak for the Year 1902."—*Dipl. and Cons. Reports*, No. 3,096, Ann. Ser., 1903 [Cd. 1,766-30], and information furnished by the Borneo Company, Ltd.

† Commissioner Sharpe, "Trade and General Condition of British Central Africa Protectorate for the Year 1905-1906."—[Cd. 2242], 1904, pp. 17 and 18; Acting Commissioner Wallis, "Report for 1904-5" [Cd. 2,684-18] 1905, p. 33; and Commissioner Sharpe "Report for 1905-6" [Cd. 2,684-45], 1906.

‡ F. J. Jackson, "British East Africa Protectorate Report for 1904-5," *Colonial Reports—Annual No. 475* [Cd. 2,684-21], 1905, p. 11.



British Guiana.\*

*Diamonds.*—No further development of this industry took place during the year 1905–6. 65,752 stones, weighing 4,097 carats and valued at £3,841, were produced; these came from the Mazaruni River, and were obtained by primitive methods of hand washing.

*Gold.*—The production for the year was 94,363 ozs. of alluvial gold, or a decrease of 1,501 ozs. on that of the previous year.

The hydraulicing plant at Omai on the Essequibo River continued operations throughout the year, and the gold dredger at Gilt Creek was also at work on the gravel in the Creek. The return of gold from both sources amounted to 12,651 ozs. of gold (bullion), as against 12,683 ozs. during the previous year.

A new and powerful dredge has been erected at Omai, and it is confidently expected that good returns will be obtained from her work.

The development work on the Barima Mine, Arakaka Creek, has been stopped pending some re-arrangement of the Company to whom the mine belongs.

The 15-stamp mill at Peter's Mine on the right bank of the Puruni river, commenced work in September, 1905, and the results of the crushing have been very satisfactory. 4,461 ozs. of gold were obtained from 6,091 tons of quartz up to the 31st March, 1906.

TABLE 318.

PERSONS EMPLOYED at MINES, ALLUVIAL WORKINGS, and QUARRIES during the Years 1904–1905 and 1905–1906.

Kind of Workings.					1904–1905.	1905–1906.
Mines and Alluvial or Placer Diggings ...					11,214 (a)	11,088 (a)
Granite Quarries ... ..					27	45

(a) Approximate figures, and relate to the number of men registered.

TABLE 319.

QUANTITY and VALUE of the MINERALS produced in 1904–1905 and 1905–1906.

Mineral.	Financial Year 1904–1905.			Financial Year 1905–1906.		
	Quantity.		Value.	Quantity.		Value.
Diamonds ... ..	Carats.	Grammes.	£	Carats.	Grammes.	£
	10,619	2,182	16,395	4,097	841	3,841
Gold ... ..	Ozs.	Kilos.		Ozs.	Kilos.	
	95,864	2,982	349,504	94,363	2,935	334,202
Granite ... ..	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
	3,397	3,452	2,123	3,137	3,187	2,606
Total value ... ..	—	—	368,022	—	—	340,649

\* Official Return furnished by the Department of Lands and Mines, Georgetown : *British Guiana, Report of the Commissioner of Mines for the year 1905–1906.* George Town Demerara, 1906.

BRITISH GUIANA—*continued.*

The table below shows the output of the principal districts :—

TABLE 320.  
*Gold obtained.*

District.					Financial Year 1904-1905.	Financial Year 1905-1906.
					Ozs.	Ozs.
Barima	...	...	...	...	19,970	18,889
Barama and Waini	...	...	...	...	6,542	6,061
Cuyuni	...	...	...	...	16,584	14,893
Demerara	...	...	...	...	814	266
Essequebo	...	...	...	...	21,343	19,702
Groote Creek	...	...	...	...	955	955
Mazaruni	...	...	...	...	1,795	3,942
Potaro	..	...	...	...	21,177	21,121
Puruni	...	...	...	...	6,684	8,534
Total output in ozs.					95,864	94,363
" " kil.					2,982	2,935

TABLE 321.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1904-1905  
and 1905-1906.

Kind of Workings.	1904-1905.		1905-1906.	
	Persons Killed.	Death-rate per 1,000 Persons employed.	Persons Killed.	Death-rate per 1,000 Persons employed.
Gold mines ... ..	1	·09	3	·27
Alluvial or Placer diggings ...				
Granite quarries ... ..	Nil.	—	Nil.	—

## British New Guinea.\*

There are several goldfields in the Possession, viz., Louisiade, Sudest and Misima Islands, Gira, Yodda, Murua or Woodlark Island, Milne Bay, Cloudy Bay, and Musa River, which give employment to between 300 and 350 persons. The output of gold for the year ended 30th June, 1905, judging by the Customs returns of the quantity exported, which do not show a complete record of all the gold that leaves the Possession, shows an increase on that of the preceding year. At Karavakoom, situated on Suloga Bay, some highly payable results from crushings of gold ore are reported to have been obtained in 1905.

A small quantity of mica valued at £10 was exported from Samarai during the year 1902-1903.

\* Annual Report on British New Guinea for 1904-1905.



BRITISH NEW GUINEA—continued.

TABLE 322.

	Year.	Gold exported.		Value.
		Ozs.	Kil.	£
	1903-1904	14,976(a)	466	52,083
	1904-1905	15,091(a)	470	52,310

(a) In addition 154 tons of gold ore and concentrates valued at £3,603 were exported in 1903-4, and 201 tons valued at £4,052 in 1904-5.

Five fatal accidents, by which 1 white man and 4 natives lost their lives, occurred through "falls of ground" in 1904-5. As only a small number of persons are employed in mining in the Island the death-rate, which was 15·38 per 1,000, is therefore very high.

British Solomon Islands.\*

Copper ore is known to exist in the Island of Rendova, and a concession for a period of two years was granted in 1902 for the purpose of working sulphur in the Island of Vella Lavella.

Canada.†

*Asbestos.*—A full description of the occurrence, exploitation and uses of this mineral are given in a recent report‡ by Fritz Cirkel, M.E. The Canadian asbestos, which mineralogically is chrysotile, occurs in considerable quantities in the form of small veins in intrusive serpentinite, in the Eastern Townships of the province of Quebec, and at various points north of Ottawa in association with serpentinous rocks in the Laurentian formation. An important discovery of long fibre asbestos of good quality is reported to have been made lately in the Chibougamau Lake district in Northern Quebec. The whole of the quantity obtained in 1905 came from Quebec.

*Chromic Iron Ore.*—This ore is obtained from irregular pockets in the intrusive serpentines of the Eastern Townships of the province of Quebec.

*Coal.*—The oldest coalfields, which have been largely developed, are situated on the seaboard of the Atlantic and Pacific Oceans, and are therefore of no small importance from an Imperial point of view. On the Atlantic side of the continent, bituminous coal is being mined from thick seams of true Carboniferous age at the Sydney (Cape Breton), Pictou, Inverness and Cumberland coalfields, in Nova Scotia. New Brunswick has a small area of thin seams of bituminous coal. The coal of the Pacific coast, generally bituminous, is of Cretaceous age, and is derived from collieries at Nanaimo, Extension, and Comox, in Vancouver Island. Anthracite and bituminous coal occur in Queen Charlotte Islands.

In the interior of the Dominion no coal is found between the Atlantic seaboard and the prairies of the West, where great quantities of lignite exist. At Lethbridge the seams are worked on a large scale. On approaching the Rocky Mountains, the seams worked along the Crow's nest branch of the Canadian Pacific Railway improve in quality, and yield bituminous coal. Further west, on the main line of the same railway is the Cascade coalfield, in the vicinity of Banff, one of the well-known pleasure resorts of

\* Woodford, "British Solomon Islands Annual Report for 1901-1902." *Colonial Reports*, Annual, No. 372 [Cd. 788-42] London, 1902, p. 16.  
† *Reports of the Mines Section of the Geological Survey of Canada for the years 1904 and 1905.* Ottawa.  
‡ Ottawa, Canada, 1905.

## CANADA—continued.

the Rocky Mountains, where some of the coal has become converted into semi-anthracite and anthracite.

Thick seams of good bituminous coal and semi-anthracite have long been known to exist in the vicinity of the Crow's Nest Pass, and this store of valuable fuel is now being worked on a large scale. All these coals are of Cretaceous age.

In 1905 the output of coal (including the quantity converted into coke) in the Dominion reached more than 7½ million tons, of which Nova Scotia produced over 66 per cent., and British Columbia 22 per cent., 1,028,074 tons of coal were charged to coke ovens during the year, producing 622,154 tons of coke.

*Cobalt.*—Rich deposits of silver—cobalt—nickel ores have been found near the Northern end of Lake Temiskaming.

*Copper.*—Copper ore is mined in the provinces of British Columbia, Ontario, and Quebec, the first-named being by far the most important. Its output has increased very largely during the past three years owing to the yield of the mines in the Kettle River, Grand Forks, and Osoyoos Mining Divisions, which lie upon the border of the United States. This "Boundary" district, as it is called, produced in 1904 more than 73 per cent. of the total output of the province.

In Ontario copper pyrites accompanies the nickeliferous pyrrhotite, which has made the Sudbury district so famous; during 1905 about 15,540 tons of high grade matte containing 3,919 tons of copper were shipped from that district. Large quantities of regulus containing copper and nickel are produced at the Sudbury smelting works and sent to the United States and Great Britain for the extraction of the two metals.

In the province of Quebec there are veins of cupreous iron pyrites containing a little silver, and they furnish an ore which is utilised in the manufacture of sulphuric acid before the valuable metals are extracted.

*Corundum.*—In the year 1897 large deposits of corundum were discovered near Raglan, in the counties of Peterborough, Hastings, and Renfrew, in Eastern Ontario; the mineral is now being worked on a large scale for the purpose of making corundum wheels, and Canada is becoming one of the greatest corundum-producing countries in the world.

*Gold.*—Canada shows a falling off of over 11 per cent. in the gold production in 1905 as compared with 1904. At the present time the chief gold-producing provinces of the Dominion are the Yukon region of the North-West Territories, British Columbia, Nova Scotia, and Ontario.

The Yukon region, with the great Klondike goldfield, produced about 57 per cent of Canada's output; but the yield of 402,864 ozs. shows a falling off of 20 per cent. compared with that of the previous year.

Next in importance is British Columbia, with a yield of 285,554 ozs. of gold in 1905, of which 46,894 ozs. were obtained from alluvial deposits and 238,660 ozs. from lodes. The most important alluvial or placer district at the present time as regards output is Cassiar. Arrangements are being made to work placer gold in the Atlin Division with steam shovels. Most of the lode gold is extracted by smelting auriferous copper ores in the Rossland, Nelson, and "Boundary" districts, and some by amalgamation and concentration. Gold dredging has not as yet proved a commercial success.

The gold of Nova Scotia is derived from free-milling quartz veins.

In Ontario prospecting and development work was carried on during 1905, both in the old districts in the eastern parts of the province and in the newer gold-bearing districts west of Thunder Bay. The existence of auriferous veins has been proved over a considerable extent of country from the extreme west of the province in the vicinity of the Lake of the Woods, through Rainy Lake, Seine River, Manitou Lake, Wahnapiatae Lake, to the Marmora district in the east.

*Granite and Miscellaneous Building Stones.*—Building stones, such as granite, limestones, marble, and sandstone abound in the Dominion, and it is only the lack of a sufficient market which prevents their being worked on a larger scale.



## CANADA—continued.

*Graphite.*—This mineral is obtained in the provinces of New Brunswick, Ontario, and Quebec from crystalline limestone in the Laurentian rocks. Most of the graphite raised in 1905 came from mines in the province of Ontario.

*Gypsum.*—New Brunswick and Nova Scotia are remarkable for thick beds of gypsum, some of which occurs in the form of spotlessly white alabaster. A small amount of gypsum is being mined in Ontario.

*Iron Ore.*—Numerous iron ore deposits are known in Nova Scotia, but the output is at present small in comparison with the quantity which is imported from Newfoundland. In Quebec the furnaces use bog ore produced in the province in admixture with ores brought from outside. In Ontario iron ore is obtained on a large scale from Helen Mine at Michipicoten on Lake Superior, and prospecting work is being carried on actively in many iron ore districts discovered during the last few years throughout the northern part of the province, known as New Ontario.

*Lead Ore.*—The lead mining of Canada is practically confined to the province of British Columbia, especially in the East and West Kootenay districts. A small quantity is obtained from Ontario. The production in 1905 shows a considerable increase on that of 1904.

*Mercury.*—A little cinnabar was obtained a few years ago from mines near Kamloops Lake, in British Columbia, but none appears to have been raised since 1897.

*Mica.*—This mineral is mined quite extensively in various places. The phlogopite and biotite varieties are obtained in the provinces of Ontario and Quebec, in the district about Ottawa, whilst transparent muscovite of excellent quality is found at Tête Jaune Cache, in British Columbia. As in the case of Asbestos, a Report by F. Cirkel, M.E.\*, on the occurrence, exploitation and uses of mica has recently been published by the Mines Branch of the Canadian Government.

*Natural Gas.*—In Essex and Welland counties in the peninsula of Ontario, natural gas has been obtained by boring down to the Lower Silurian rocks. The increased production in 1905 is chiefly due to operations in the latter county, the output of Essex county having fallen to a very small amount.

The development of the Medicine Hat gas field in the North West Territories was carried on successfully during the year. Two of the wells have been bored to a depth of nearly 1,000 feet.

*Nickel.*—Canada can boast that it possesses rich and important deposits of nickel in the Sudbury district, where the metal occurs in pyrrhotite, more or less mixed with copper pyrites. The output in 1905 was almost twice that of the previous year.

*Ochre.*—The most important ochre deposits are near Three Rivers, Champlain County, Quebec.

*Petroleum.*—Rock oil is produced only in the peninsula of Ontario, the wells numbering over 10,000. The crude oil is piped to refineries at Sarnia and Petrolia, Ontario.

*Phosphate of Lime.*—This mineral has been extensively worked from deposits in the Laurentian rocks, especially in the province of Quebec, north of Buckingham, and also to a less extent in the province of Ontario, north of Kingston. Owing to the competition of phosphates from the United States, prices have dropped, and practically none of the Canadian apatite mines are being worked as such. The phosphate appearing in the statistics was obtained as a by-product in mining for mica, or from the old waste heaps of abandoned workings.

*Platinum.*—A small quantity of platinum is annually produced from placer workings in the Similkameen district of British Columbia. In the form of sperrylite it occurs also in association with the chalcopyrite of the Sudbury nickel deposits.

*Salt.*—Thick beds of salt occur in Southern Ontario, in the Onondaga division of the Silurian rocks. The brine is pumped up and evaporated.

*Silver.*—The bounty granted by the Dominion Government on the production of lead ores appears to have stimulated the operations of the silver-lead-mines. The lead ores of British Columbia are often highly argentiferous. In 1905 this province contributed 57 per cent. of the silver obtained in Canada, while a little over 40 per cent. was obtained in Ontario.

\* Ottawa, Canada, 1906.



## CANADA—continued.

The most important silver producing district in Canada at the present time is that known as the Cobalt district near Lake Temiskaming. The rich silver-cobalt-nickel ores of this district have already been mentioned under the heading "cobalt." Shipments of ore in 1905 contained 2,441,000 ounces of silver, and there will probably be a greatly increased output in 1906.

*Slate.*—A small amount of slate is obtained from the Cambrian rocks, in the province of Quebec.

*Zinc.*—The zinc is obtained from the county of Frontenac in Ontario, and from the Slocan district in British Columbia. Attention is being given towards utilising the Zinc blende associated with the argentiferous galena in East and West Kootenay. The whole question of supply and utilization of these ores has been investigated and reported on by a Commission instituted by the Federal Government.

TABLE 323.

QUANTITY and VALUE of MINERALS produced in the DOMINION of CANADA during the Years 1904 and 1905.\*

Mineral or other product.	1904.			1905.†		
	Quantity.		Market Value, less Charges of Transport from Place of Production.	Quantity.		Market Value, less Charges of Transport from Place of Production.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Arsenic ... ..	65	86	1,418	—	—	—
Asbestic ... ..	11,617	11,803	2,673	15,709	15,961	3,473
Asbestos ... ..	31,817	32,328	239,843	45,341	45,967	305,416
Baryta ... ..	1,234	1,254	761	3,000	3,048	1,541
Coal ... ..	6,705,232	6,812,834	2,999,813	7,835,654	7,991,397	3,628,483
Cobalt ... ..	—	—	—	—	—	20,548
Coke ... ..	485,319	493,107	387,168	†	†	—
Copper (fine, contained in ore).	19,183	19,491	1,132,216	21,249	21,590	1,524,750
Corundum ... ..	821	834	20,764	1,468	1,492	30,648
Felspar ... ..	9,896	10,055	4,349	10,446	10,614	4,808
Fireclay ... ..	—	—	—	§	§	§
Flagstones ... ..	—	—	1,381	—	—	1,572
Gold (fine) ... ..	ozs. 793,298	kil. 24,674	3,369,863	ozs. 700,755	kil. 21,796	2,976,747
Granite ... ..	—	—	20,548	—	—	43,059
Graphite ... ..	404	410	2,416	483	491	3,500
Gravel and Sand ...	356,972	362,701	26,672	327,621	332,879	31,398
Grindstones ... ..	4,026	4,091	8,791	4,618	4,692	11,753
Gypsum ... ..	304,251	309,133	76,628	389,097	395,341	119,495
Iron ore ... ..	150,789¶	153,158	82,549	104,267¶	105,940	25,709
" chromic ... ..	5,423	5,510	13,797	7,656	7,779	19,171
Iron (pig) ... ..	60,979	61,958	185,318	62,995	64,006	215,314
Lead ... ..	16,964	17,236	336,456	24,983	25,384	541,250
Limestone for flux in smelting iron ore.	179,148	182,023	36,364	305,012	309,907	53,170
Manganese ore ... ..	110	112	556	20	20	353
Mica ... ..	—	—	31,268	—	—	34,529
Mineral water ... ..	—	—	16,498	—	—	20,548
Natural gas ... ..	—	—	50,829	—	—	64,572
Nickel ... ..	4,709	4,785	866,949	8,427	8,562	1,551,478
Ochres ... ..	3,504	3,560	5,136	4,558	4,631	7,125
Peat ... ..	—	—	—	—	—	—
Petroleum ... ..	galls. 19,340,125	litres 87,871,046	202,256	galls. 22,193,325	litres 100,834,440	174,593
Phosphate of lime ...	819	832	943	1,161	1,180	1,731
Pyrites (Copper and Iron).	29,499	29,972	19,479	29,236	29,705	25,392
Salt ... ..	61,408	62,393	65,472	40,509	41,159	63,875
Sand (moulding) ... ..	3,056	3,105	1,395	§	§	§
Silver (fine) ... ..	ozs. 3,718,668	kilos. 115,664	497,231	ozs. 5,974,875	kilos. 185,839	740,950
Slate ... ..	—	—	4,777	—	—	4,432
Talc ... ..	750	762	385	446	453	370
Tripolite ... ..	286	291	1,315	179	182	740
Zinc ... ..	213	216	5,005	§	§	**
Other metallic products including zinc.	—	—	—	—	—	36,986

\* Reports of the Division of Mineral Statistics and Mines of Canada for the years 1904 and 1905. Ottawa.

† Preliminary Return, subject to revision.

‡ The coke produced in 1905 amounted to 622,154 tons, and was obtained from 1,028,074 tons of coal. The quantity of coal from which the coke was made is included under the heading "coal."

§ Not stated.

|| Estimated on the value of 1 oz. of gold being worth £4 4s. 11½d.

¶ Quantity exported.

\*\* Included under "other metallic products."



CANADA—continued.  
TABLE 323—continued.

Mineral or other product.	1904.			1905.†		
	Quantity.		Market Value, less Charges of Transport from Place of Production.	Quantity.		Market Value, less Charges of Transport from Place of Production.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Building materials :—						
Bricks ... ..	—	—	1,678,415	—	—	1,739,570
Building stone ...	—	—		—	—	
Cement, natural ...	—	—		—	—	
" Portland ...	—	—		—	—	
Lime ... ..	—	—		—	—	
Pottery ... ..	—	—		—	—	
Sewer pipe ... ..	—	—		—	—	
Terra cotta ... ..	—	—	61,644	—	—	61,644
Tiles ... ..	—	—		—	—	
Estimated value of mineral products not returned.	—	—		—	—	
Total value ...	—	—	12,399,281	—	—	14,090,693

The mineral production of Canada on the whole shows an increase; the total value of its metallic and non-metallic products were slightly over 14 millions sterling, which is an increase of about 14 per cent. compared with the previous year.

In 1905 gold contributed 27·40 per cent. of the total value; coal and coke, 27·62 per cent.; copper, 8·83 per cent.; nickel, 7·02 per cent.; silver, 3·41 per cent.; lead 2·69 per cent.

The mining industries of some of the provinces of the Dominion are sufficiently important to deserve separate tables.

BRITISH COLUMBIA.\*

TABLE 324.  
PERSONS EMPLOYED at MINES during the Years 1904 and 1905.

KIND OF MINES.	1904.			1905.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	3,278	1,175	4,453	3,127	1,280	4,407
Metal- { Shipping ...	2,143	1,163	3,306	2,394	1,202	3,596
liferous { Non-shipping†	100	59	159	76	38	114
Total ... ..	5,521	2,397	7,918	5,597	2,520	8,117

TABLE 325.  
QUANTITY and VALUE of MINERALS produced during the Years 1904 and 1905.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Coal ... ..	1,253,628	1,273,746	772,784	1,384,312	1,406,527	853,343
Coke ... ..	334,102	339,464	244,960	271,785	276,146	279,231
Copper ... ..	15,942	16,198	940,693	16,827	17,097	1,207,443
Gold, Alluvial... ..	ozs. 55,765	kilos. 1,734	229,171	ozs. 48,465	kilos. 1,508	199,171
" from veins, &c. ...	ozs. 222,042	kilos. 6,906	943,070	ozs. 238,660	kilos. 7,423	1,013,651
Lead ... ..	16,360	16,623	292,166	25,259	25,664	492,950
Silver ... ..	ozs. 3,222,481	kilos. 100,230	353,325	ozs. 3,439,417	kilos. 106,978	405,168
Other minerals ... ..	—	—	123,288	—	—	164,384
Total value ... ..	—	—	3,899,457	—	—	4,615,341

\* Annual Reports of the Minister of Mines for British Columbia for 1904 and 1905, Victoria.  
† The statistics of mines not shipping ores are very incomplete.

CANADA.—BRITISH COLUMBIA—continued.

TABLE 326.

DEATHS FROM ACCIDENTS AT COAL MINES during the Years 1904 and 1905.

Cause of Accident.	No. of Persons Killed.	
	1904.	1905.
<i>Underground:</i>		
Falls of coal ... ..	5	2
„ rock ... ..	4	4
Explosion or suffocation by gas ...	21	—
Crushed by cars ... ..	3	3
Blasting ... ..	1	1
Struck by posts ... ..	—	1
<i>Surface:</i>		
Railways ... ..	—	—
Miscellaneous ... ..	3	1
Total ... ..	37	12

During the year 1905 there were 14 fatal accidents at metalliferous mines, causing 14 deaths, or the same number as in 1904.

TABLE 327.

DEATH-RATE FROM ACCIDENTS AT MINES during the Years 1904 and 1905.

KIND OF MINES.	1904.			1905.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	10.37	2.55	8.31	3.52	.78	2.72
Metalliferous ...	—	—	4.23*	—	—	3.89*

The above table shows a considerable improvement in the death-rate from accidents among coal miners in 1905 as compared with the previous year.

NOVA SCOTIA.†

TABLE 328.

PERSONS EMPLOYED AT COAL MINES during the Years ended 30th September 1904 and 1905.

Year.	Under-ground.			Above-ground.			Construction.			Total.
	Men.	Boys.	Total.	Men.	Boys.	Total.	Men.	Boys.	Total.	
1904 ... ..	7,729	717	8,446	2,647	190	2,837	372	4	376	11,659
1905 ... ..	7,495	667	8,162	2,391	159	2,550	65	3	68	10,780

The number of persons employed at gold mines during the year ending 30th September 1905 was about 503 and at iron mines 263.

\* Calculated on the number of persons employed at mines shipping ore.  
† Reports of the Department of Mines for Nova Scotia for 1904 and 1905, Halifax.



CANADA.—NOVA SCOTIA—continued.

TABLE 329.

QUANTITY of MINERALS produced during the Years ended 30th September 1904 and 1905.

Mineral.	Year ended 30th September 1904.		Year ended 30th September 1905.	
	Quantity.		Quantity.	
	Statute Tons.	Metric Tons.	Statute Tons.	Metric Tons.
Barytes ... ..	982	998	4,018	4,082
Coal ... ..	5,247,135	5,331,339	5,050,420	5,131,467
Coke .. ...	209,962	213,331	328,373	333,643
Gold ... ..	ozs. 14,279	kilos. 444	ozs. 15,550	kilos. 484
Grindstones ... ..	800	813	—	—
Gypsum (exported) ... ..	161,755	164,351	176,154	178,981
Iron ore ... ..	49,619	50,415	73,600	74,781
Limestone ... ..	191,356	194,427	274,002	278,399
Manganese ore (exported) ... ..	—	—	22	28
Sand, moulding ... ..	175	178	230	234

TABLE 330.

DEATHS from ACCIDENTS at MINES during the Years ended 30th September 1904 and 1905.

Year.	Kind of Mines.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
1904 ...	Coal ... ..	26	2.23
	Gold ... ..	—	—
1905 ...	Coal ... ..	20	1.86
	Gold ... ..	1	1.99

ONTARIO.\*

TABLE 331.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1904 and 1905.

Kind of Working.	1904.	1905.
Copper and nickel ... ..	1,063	1,175
Gold and arsenic ... ..	230	279
Iron ore ... ..	191	278
Mica ... ..	79	104
Petroleum ... ..	400†	†
Salt ... ..	193	148
Silver ... ..	57	475
Other workings ... ..	8,278	8,692
Total ... ..	10,491	11,151

\* Reports of the Bureau of Mines for Ontario for 1904 and 1905, Toronto.  
† Including persons employed in petroleum refineries.  
‡ Not stated.

CANADA.—ONTARIO—continued.

TABLE 332.

QUANTITY and VALUE of MINERALS produced during the Years 1904 and 1905.

Mineral or other Product.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.		Statute Tons.	Metric Tons.	
Actinolite ... ..	364	370	21	—	—	—
Arsenic... ..	64	65	186	490	498	553
Calcium carbide ...	2,092	2,126	31,298	2,167	2,202	32,210
Cobalt ... ..	26	26	7,525	105	107	20,548
Copper ... ..	1,931	1,962	61,053	4,040	4,105	141,574
Corundum ... ..	1,487	1,511	30,954	1,501	1,525	31,328
Felspar ... ..	9,806	9,963	4,514	10,923	11,098	6,158
Gold ... ..	ozs. 2,285	kilos. 71	8,219	ozs. 5,770	kilos. 179	20,521
Graphite ... ..	317	322	966	1,855	1,885	2,019
Gypsum ... ..	4,832	4,910	2,193	2,101	2,135	846
Iron ore ... ..	47,547	48,310	22,206	188,926	191,958	46,830
Iron pyrites ... ..	12,010	12,203	8,983	6,540	6,645	4,497
Lead ... ..	2,866	2,912	2,260	126	128	1,849
Lime ... ..	bushels 2,600,000	decalitres 9,450,392	83,589	bushels 3,100,000	decalitres 11,267,775	87,267
Mica ... ..	296	301	8,733	281	286	10,366
Natural gas ... ..	—	—	52,094	—	—	65,029
Nickel ... ..	4,235	4,303	311,660	8,485	8,621	72,932
Palladium ... ..	ozs. 952	kilos. 30	3,815	—	—	—
Peat ... ..	714	725	493	357	363	247
Petroleum (orude) ...	galls. 17,237,220	litres 78,316,585	185,843	galls. 22,131,658	litres 100,554,259	184,632
Platinum ... ..	ozs. 536	kilos. 17	2,148	ozs. 1,562	kilos. 49	5,777
Salt ... ..	49,890	50,691	74,511	53,942	54,808	73,312
Silver ... ..	ozs. 206,875	kilos. 6,435	22,990	ozs. 2,473,452	kilos. 76,933	76,619
Talc ... ..	1,172	1,191	600	1,120	1,016	460
Zinc ore ... ..	476	484	760	—	—	—
Building materials :— Bricks,tiles,pipes,&c.	—	—	473,672	—	—	150,274
Building stone, &c.	—	—	143,836	—	—	143,836
Cement, Portland ...	barrels 880,871	—	254,789	barrels 1,254,360*	199,139	160,983
„ rock ... ..	„ 85,000	—	13,408	„ 14,741	13,373	2,187
Total value ... ..	—	—	1,813,314	—	—	1,342,807

TABLE 333.

NUMBER of DEATHS from ACCIDENTS at MINES during the Years 1904 and 1905.

Kind of Mine.	Number of Persons Killed.		Death-rate per 1,000 Persons Employed.	
	1904.	1905.	1904.	1905.
Copper ... ..	1	4	·94	3·40
Nickel ... ..	6	—	26·09	—
Gold ... ..	—	—	—	—
Iron ... ..	—	—	—	—

\* Barrels of 350 lbs.



CANADA—continued.

QUEBEC.\*

This Province employed 5,017 persons during the year 1905 in mining and quarrying, of whom 1,650 were engaged in getting asbestos, the most important mineral

TABLE 334.  
OUTPUT and VALUE of MINERALS during the Years 1904 and 1905.

Mineral.	1904.			1905.		
	Statute Tons.	Metric Tons.	Value.	Statute Tons.	Metric Tons.	Value.
Asbestos .. ..	31,678	32,186	£ 243,862	43,714	44,416	£ 303,380
Asbestic .. ..	11,740	11,928	2,697	17,161	17,436	6,390
Cement ... ..	barrels 33,500	—	10,325	barrels 254,833	—	83,836
chrome iron ...	5,740	5,832	14,692	7,614	7,736	21,486
Copper ore ... ..	21,187	21,527	19,521	25,575	25,985	26,476
Flagstones ... ..	sq. yds. 3,000	sq. metres 2,508	524	sq. yds. 2,930	sq. metres 2,450	512
Gold ... ..	ozs. 20	kilos. 1	37	—	—	—
Granite ... ..	—	—	24,658	—	—	24,658
Graphite ... ..	22	22	473	—	—	—
Iron ores ... ..	14,511	14,744	11,339	11,047	11,224	7,247
Mica ... ..	135	137	17,471	169	172	19,415
Ochre ... ..	1,420	1,443	3,868	1,701	1,728	4,659
Phosphate ... ..	652	662	943	1,317	1,338	1,824
Slate ... ..	squares 5,277	—	4,777	squares 4,900	—	4,432
Building materials...	—	—	266,096	—	—	266,096
Total value ... ..	—	—	621,283	—	—	770,611

There were 4 persons killed by accidents at mines and quarries in 1904, and 2 in 1905, the death-rates being .79 and .40 per 1,000 persons employed respectively.

Cape Colony.†

Though the diamond industry overshadows all other kinds of mining in the Colony, copper ore has long been a notable article of export.

*Asbestos.*—This mineral occurs in the form of narrow veins, from one to five inches wide, in a dark shale at Westerberg, in the Prieska district, and Koegas, in the Hay district.

*Coal.*—No extensive boring or examination of the country has been made, but outcrops of coal have been discovered at various points along the plateau lying between the Drakensberg range and the Matiwane Mountains, and along the southern slopes of those mountains, between the Kei and Umzimkulu rivers; the seams are mostly thin. Some specimens of coal found in the Cala district are reported to be of good quality and suitable for steam purposes. As shown by Table 336, the total output of coal was 146,529 statute tons in 1905. Of this amount, Indwe produced 81,327 tons; the rest came from collieries at Cyphergat, Sterkstroom, Molteno, &c.

*Copper Ore.*—Namaqualand produces all the copper ore; apparently the copper mines are not under official inspection.

\* Obalski, *Mining Operations in the Province of Quebec for the years 1904 and 1905*. Department of Lands, Mines and Fisheries, Quebec, 1905 and 1906.  
† *Statistical Registers for 1904 and 1905*, Cape Town, and *Reports of the Inspector of Mines for Kimberley, &c., for 1904 and 1905*, Cape Town.

## CAPE COLONY—continued.

*Crocidolite*.—Small quantities of this mineral, which is used for ornaments and as a jewel, are obtained in the district of Hay and other places.

*Diamonds*.—The gems are obtained mainly from open and underground workings in the solid rock near Kimberley, and to a small extent from alluvial diggings. The three principal mines worked at the present time are De Beers, Kimberley, and Premier (Wesselton), but great progress was made in 1905 in the development of Bultfontein and Dutoitspan Mines, and the latter accounts mainly for the large increase in the number of persons employed in that year. The average yield of diamonds per load of blue ground from the mines, and the value per carat are as follows: De Beers and Kimberley 41 of a carat, value 61*s.* 0*d.*; Wesselton or Premier Mine 282, value 43*s.* 9*d.*; Bultfontein 363, value 42*s.* 11*d.*; and Dutoitspan 245, value 80*s.* 11*d.*\*; from these figures it will be seen that the diamonds from the last named mine have an exceedingly high value.

In addition to the Kimberley mines, there are a few diamond mines in the Barkly West and Hay divisions, besides alluvial diggings.

*Gold*.—A small quantity of gold is obtained from Millwood in the Knysna division.

*Salt*.—Salt pans are found in 17 divisions of the Colony, the largest being in Kimberley, Cradock (Maraisburg), Port Elizabeth, Piquetberg Uitenhage, and Malmesbury.

TABLE 335.

PERSONS EMPLOYED during the Years 1904 and 1905.

Class of Mine.	Under-ground.			Above-ground.			Total for 1905.			Total for 1904.
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.	
Salt ... ..	—	—	—	—	—	—	—	—	†137	†137
Asbestos ... ..	—	—	—	—	—	—	—	—	144	†
Coal ... ..	76	1,668	1,744	84	617	701	160	2,285	2,445	2,687
Copper Ore ... ..	—	—	—	—	—	—	325	1,965	2,290	2,437
Diamond (Kimberley)	511	5,062	5,573	2,463	10,271	12,734	2,974	15,333	18,307	14,162
" (Barkly West and Hay Divisions.)	—	—	—	—	—	—	96	689	785	†
Total ... ..	—	—	—	—	—	—	—	—	24,108	19,423

TABLE 336.

QUANTITY and VALUE of MINERALS produced during the Years 1904 and 1905.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asbestos ... .. (exported)	367	373	5,993	600	610	9,794
Coal ... ..	154,272	156,748	153,503	146,529	148,880	136,928
Copper ore ... ..	84,199	85,550	381,756	94,854	96,376	467,607
Crocidolite ... .. (exported)	†	—	†	†	—	†
Diamonds ... ..	carats 2,210,314*	kilos. 454	4,802,844*	carats 2,213,991*	kilos. 455	5,607,718*
Fireclay ... ..	†	—	†	†	—	†
Gold ... ..	ozs. 36	kilos. †	†	ozs. 98	kilos. 3	†
Salt, white ... ..	†	—	†	6,002	6,098	18,450§
Total value ... ..	—	—	5,344,096	—	—	6,240,497

\* De Beers Consolidated Mines, Ltd., "Eighteenth Annual Report for the year ending 30th June, 1906," Kimberley, 1906.

† These figures represent the number of persons engaged in the salt industry according to the Census of 1904.

‡ Not stated.

§ Value estimated.

|| Revised figures.



CAPE COLONY—continued.

TABLE 337.

DEATHS from ACCIDENTS at COAL and DIAMOND MINES during the Years 1904 and 1905.

Class of Mine.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	2	1	3	1·15	1·43	1·23
Diamond (Kimberley) ...	45	19	64	8·07	1·49	3·50
„ (Barkly West and Hay).	1	1	2	*	*	2·92
Total for Coal and Diamond Mines for 1905.	48	21	69	6·42†	1·49†	3·20‡
Total for preceding year...	24†	14†	38†	4·34†	1·57†	2·26†

Nearly 44 per cent. of the deaths at Diamond mines were caused by falls of ground.

Kimberley Diamond Mines.§

TABLE 338.

PERSONS EMPLOYED during the Years 1904 and 1905.

Year.	Under-ground.			Above-ground.			Total.		
	White.	Coloured.	Total.	White.	Coloured.	Total.	White.	Coloured.	Total.
1904 ...	395	3,179	3,574	2,360	8,228	10,588	2,755	11,407	14,162
1905 ...	511	5,062	5,573	2,463	10,271	12,734	2,974	15,333	18,307

TABLE 339.

DEATHS from ACCIDENTS during the Years 1904 and 1905.

Year.	Place.	Number of Deaths.			Death-rate per 1,000 Persons Employed.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
1904 ... {	Under-ground ...	3	15	18	7·59	4·71	5·04
	Above-ground ...	2	12	14	·85	1·46	1·32
	Total... ..	5	27	32	1·82	2·37	2·26
1905 ... {	Under-ground ...	3	42	45	5·87	8·30	8·07
	Above-ground ...	2	17	19	·81	1·66	1·49
	Total... ..	5	59	64	1·68	3·85	3·50

\* These death-rates cannot be given as the number of persons employed underground and on the surface respectively are not stated.  
† Excluding Barkly West mines.  
‡ Including Barkly West and Hay Division Diamond Mines.  
§ Reports of the Inspector of Mines for Kimberley, &c., for 1904 and 1905, Cape Town, and Statistical Register for 1905, Cape Town.

## CAPE COLONY—continued.

## Kimberley Diamond Mines—continued.

TABLE 340.

## CAUSES of ACCIDENTS in 1904.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud-rushes ... ..	1	—	3	3	—	—	—
Falls of ground ... ..	28	—	8	8	6	16	22
Falling down “ passes ” ... ..	2	—	1	1	—	1,	1
Machinery ... ..	—	—	—	—	—	—	—
Whilst ascending or descending by machinery.	3	1	1	2	1	3	4
Falling down shaft ... ..	2	2	—	2	—	—	—
Falling off staging in shaft ... ..	—	—	—	—	—	—	—
Falls from ladders... ..	4	—	1	1	1	2	3
Ignition of gas ... ..	—	—	—	—	—	—	—
Ground falling from sides of shaft	—	—	—	—	—	—	—
Things falling down shafts ... ..	—	—	—	—	—	—	—
On tramways or by trucks ... ..	9	—	—	—	1	8	9
Explosives ... ..	4	—	1	1	3	1	4
Miscellaneous ... ..	2	—	—	—	—	2	2
Total under-ground ... ..	55	3	15	18	12	33	45
<i>Surface and Open Works.</i>							
Falls of ground and débris ... ..	40	—	5	5	1	34	35
On tramways or by trucks ... ..	108	—	2	2	16	90	106
Whilst ascending open mine on aerial gear.	1	1	1	2	—	—	—
Falling from face of open mine ... ..	2	—	—	—	—	2	2
Falling from standing wire in open mine.	1	—	1	1	—	—	—
Machinery ... ..	9	1	1	2	3	5	8
Electric shock ... ..	3	—	1	1	2	—	2
Explosives ... ..	2	—	—	—	1	1	2
Miscellaneous ... ..	39	—	1	1	15	23	38
Total ... ..	205	2	12	14	38	155	193
Totals (under and above ground)	260	5	27	32	50	188	238



## CAPE COLONY—continued.

## Kimberley Diamond Mines—continued.

TABLE 341.  
CAUSES of ACCIDENTS in 1905.

Cause of Accident.	Number of Separate Accidents.	Number of Persons Killed.			Number of Persons Injured.		
		White.	Coloured.	Total.	White.	Coloured.	Total.
<i>Under-ground.</i>							
Mud-rushes... ..	—	—	—	—	—	—	—
Falls of ground ... ..	58	—	28	28	4	41	45
Falling down “ passes ” ... ..	4	—	1	1	—	3	3
Machinery ... ..	3	1	—	1	—	2	2
Whilst ascending or descending by machinery.	2	—	1	1	1	—	1
Falling down shaft ... ..	2	—	2	2	—	—	—
Bucket falling down pass ... ..	1	—	1	1	—	—	—
Falls from ladders... ..	4	—	—	—	—	4	4
Ignition of gas ... ..	2	1	—	1	1	—	1
Electric shock ... ..	1	—	1	1	—	—	—
Overcome by dynamite fumes ... ..	1	—	1	1	—	—	—
On tramways or by trucks ... ..	13	—	1	1	4	8	12
Explosives ... ..	12	1	6	7	1	10	11
Miscellaneous ... ..	—	—	—	—	—	—	—
Total under-ground ... ..	103	3	42	45	11	68	79
<i>Surface and Open Works.</i>							
Falls of ground ... ..	42	—	8	8	2	34	36
On tramways or by trucks ... ..	106	—	3	3	12	91	103
Machinery ... ..	13	—	—	—	7	6	13
Falling from face of open mine ... ..	3	—	—	—	—	3	3
Falling down passes ... ..	4	—	2	2	—	2	2
Falls down ladders ... ..	5	—	1	1	—	4	4
Electric shock ... ..	2	—	1	1	1	—	1
Explosives ... ..	6	2	2	4	1	6	7
Miscellaneous ... ..	30	—	—	—	8	22	30
Total ... ..	211	2	17	19	31	168	199
Totals (under and above ground)	314	5	59	64	42	236	278

## Ceylon.\*

*Gems.*—In Ratnapura District 1,734 gem pits were at work during the year 1905, as against 1,535 in 1904, the principal stones found being rubies and cats' eyes. In Kandy District moonstones are obtained from mines at Attaragalla and Yatawara.

*Gold.*—Indications of the precious metal have been found in several places, but they are not sufficient at present to justify mining operations.

*Graphite.*—Plumbago or graphite is the most important mineral produced in Ceylon; it occurs in gneiss and mica schist, and the workings, which are chiefly in the Ratnapura and Kurunegala districts, are sometimes carried on to a depth of from 150 to 200 yards. The methods of dressing the ore at Colombo are described in a paper † by Mr. G. A. Stonier (late H.M. Inspector of Mines in India).

*Mica.*—A small quantity is exported annually.

*Pearls.*—The pearl fishery of 1905 resulted in pearls of the total value of £246,160 being obtained.

*Salt.*—This is obtained from salt lagoons or "pans," in the districts of Puttalam, Hambantola, Trincomalee, and in the Northern Province, and the manufacture is a Government monopoly.

*Stone.*—"Cabook" is a local name for laterite, the most useful building stone in the island.

*Thorianite.*—This mineral has been discovered in the river sands of the Ratnapura district.

TABLE 342.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1904 and 1905.

Kind of Workings.	Under-ground.			Above-ground.			Total Number of Persons Employed in Mines and Mineral Workings.
	Males.	Females.	Total.	Males.	Females.	Total.	
Mines ... ..	15,603	3	15,606	32,840	5,805	38,645	54,251
Mineral Workings other than Mines.	377	12	389	11,470	3,043	14,513	14,902
Total for 1905 ...	15,980	15	15,995	44,310	8,848	53,158	69,153
Total for preceding year.	12,521	79	12,600	44,721	8,407	53,128	65,728

TABLE 343.

QUANTITY and VALUE of the MINERALS produced during the Years 1904 and 1905.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coral ... ..	26,393	26,817	6,892	18,750	19,051	5,280
Mica (exported) ... ..	cwts. 4	kilos. 203	39	—	—	—
Plumbago (exported) ... ..	26,060	26,478	434,336	30,642	31,134	474,700
Precious stones and pearls ... ..	—	—	77,630	—	—	252,585
Salt ... ..	35,912	36,488	76,815	30,100	30,583	55,770
Stone:—						
" Cabook " ... ..	—	—	5,971	blocks 3,195,250	—	5,525
Gneiss ... ..	—	—	376	51,525	52,352	5,800
Granite ... ..	—	—	47,400	348,350	353,940	56,480
Gravel ... ..	—	—	6,867	232,850	236,587	5,020
Rubble stone ... ..	—	—	13,894	190,700	192,797	11,300
Thorianite ... ..	—	—	—	cwt 179	kilos. 9,004	5,000
Thorite ... ..	—	—	—	" 1	" 51	20
Total value ... ..	—	—	670,220	—	—	877,480

\* Blake, "Ceylon Report for 1905." *Colonial Report*, Annual, No. 494 [Cd. 2684-40], London, 1906, pp. 21 and 22. Official Return furnished by the Government of Ceylon. *Blue Books for Ceylon for 1904 and 1905*. Dunstan "Ceylon Report on the results of the Mineral Survey in 1904-5." *Colonial Report*, Miscellaneous, No. 37 [Cd. 3190], 1906.

† "Graphite Mining in Ceylon and India." *Transactions of the Inst. of Min. Eng.*, 1904.

CEYLON—continued.

TABLE 344.  
DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS during the Years  
1904 and 1905.

Kind of Workings.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.		
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Above-ground.	Under and Above Ground.
Mines ...	18	—	18	2	—	2	20	1·15	·05	·37
Openworks...	—	—	—	—	—	—	—	—	—	—
Total for 1905.	18	—	18	2	—	2	20	1·12	·04	·29
Total for pre- ceding year.	12	—	12	7	—	7	19	·95	·13	·29

Channel Islands.

The average number of persons employed each year in the stone quarrying industry of the Channel Islands is about 1,200.

TABLE 345.  
QUANTITY and VALUE of STONE exported during the Years 1904 and 1905.\*

Mineral and Islands where obtained.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Guernsey and Jersey : Stone, dressed or rough (exported).	484,081	491,799	256,033	427,814	434,679	231,671

Christmas Island.†

This island possesses deposits of phosphate of lime which are rich enough to be of economic value. The phosphatic rock now being worked on a large scale is, in part at all events, a limestone altered into phosphorite by the percolation from overlying guano. Between five and six hundred persons are employed, and the shipments for 1905 were 97,952 tons, as against 71,757 tons in 1904.

Cyprus. ‡

*Asbestos*.—The working of this mineral is a new industry in the island. The fibre of the asbestos obtained varies from one-eighth to an inch in length.

*Copper*.—This was obtained until recently from the ancient copper mine at Lymni, in Papho ; but operations have been suspended, as only a low grade ore was found which, in the absence of fuel near at hand for smelting, could not be profitably worked.

*Gypsum*.—As shown by the table, gypsum is of some importance, and the output and value are increasing.

\* *Annual Statement of Trade of the United Kingdom for 1905*, Vol. II. [Cd. 3022], p. 336.  
† Taylor, "Straits Settlements Report for 1902." *Colonial Report*, Annual, No. 406 [Cd. 1768-11], London, 1903, p. 18, and *Annual Report on the District Office, Christmas Island, for the year 1905*.  
‡ Official Return furnished by the Government of Cyprus.



CYPRUS—*continued.*

*Salt.*—The value of the salt obtained by allowing sea water to evaporate under the action of the sun's rays amounted to £6,250 during 1905.

*Umber.*—"Terra umbra" has long been known as a product of Cyprus, and is worked in the Larnaca and Limassol Districts.

In addition to these minerals, sandstone and limestone are quarried for building and other purposes; but the quantities are unknown.

The following are approximately the numbers of persons employed in getting minerals:—Gypsum 92, umber 20, salt 60 for about 1 month, asbestos 50 for 4 months during the year, and quarrying stone 200.

TABLE 346.

QUANTITY and VALUE of the MINERALS produced during the Years 1904 and 1905.

Minerals.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gypsum (exported)	11,115	11,293	6,527	15,973	16,229	8,733
Salt (collected) ...	3,892	3,954	12,973	1,875	1,905	6,250
Umber (exported)	2,268	2,304	1,138	2,761	2,805	1,401
Total value ...	—	—	20,638	—	—	16,384

## Dominica\* (Leeward Islands).

There is a sulphur mine at Soufrière on this Island.

## Falkland Islands.†

Extensive deposits of peat exist in these islands.

## Federated Malay States.‡

*Gold.*—The output of fine gold during the year 1905 according to Table 348 was 9,073 ozs., but the total quantity of gold exported in that year was 9,972 ozs. The Raub Australian Co. (Pahang) produced 8,232 ozs. of this quantity.

*Tin.*—The Malay Peninsula is the great tin-producing region of the world at the present day, and the States with the largest output are under British protection. The ore is obtained almost exclusively from alluvial deposits, worked partly by the open quarry method and partly by true underground mining.

All the States with the exception of Pahang show a decrease in the output in 1905, and an increase in the total value of £850,286 compared with 1904. The quantity obtained in Perak in 1905 was 26,594 tons, or more than 52 per cent. of the total quantity of metallic tin obtained in the four States.

\* Acting Governor Bell "Leeward Islands—Report for 1904-5" *Colonial Reports*—Annual No. 478 [Cd. 2,684-24] 1905, p. 23.

† Governor Allardyce "Falkland Islands—Report for 1905." *Colonial Reports*—Annual No. 490 [Cd. 2684-36] 1906, p. 22.

‡ *Annual Report on the Federated Malay States for 1905 and Report of the Senior Warden on the Administration of the Mines Department and on the Mining Industry for the year 1905*, Kuala Lumpur, 1906.

FEDERATED MALAY STATES—*continued.*

Hydraulic mining is largely carried on for the purpose of working tin deposits in the Kinta district of Perak, and near Seremban in Negri Sembilan. There were 45 monitors at work in 1905, of which 35 were in Perak and 10 in Negri Sembilan.

As regards vein mining, the most important development during the year has been the exploitation of tin lodes in the limestone at Siak, near Batu Gajah, and at Ayer Dangsang, near Lahat (Perak). The ore is accompanied by considerable quantities of arsenic.

The total number of coolies employed at the mines of the four different States, Negri Sembilan, Pahang, Perak, and Selangor, during the year 1905 amounted to 209,014, or an increase of 16,345 on the previous year's figures.

TABLE 347.  
PERSONS EMPLOYED at MINES during the Years 1904 and 1905.

	State.	1904.	1905.
	Negri Sembilan ... ..	22,347	25,798
	Pahang ... ..	9,511	10,167
	Perak ... ..	90,812	98,870
	Selangor ... ..	69,999	74,179
	Total ... ..	192,669	209,014*

TABLE 348.  
SUMMARY of QUANTITY and VALUE of MINERALS produced in the four States during the Years 1904 and 1905.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
Gold (Fine) ... ..	Statute Tons. ozs. 16,848	Metric Tons. kilos. 524	£ 71,564	Statute Tons. ozs. 9,073	Metric Tons. kilos. 282	£ 36,292§
Tin† ... ..	51,735†	52,565†	6,213,121	50,941	51,809	7,063,407
Total Value ...	—	—	6,284,685	—	—	7,099,699

TABLE 349.  
NEGRI SEMBILAN.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
Gold (Fine) ... ..	Statute Tons. ozs. 1,646	Metric Tons. kilos. 51	£ 6,991	Statute Tons. ozs. 118	Metric Tons. kilos. 4	£ 472§
Tin† ... ..	5,101†	5,183†	615,690	5,067	5,148	701,946

TABLE 350.  
PAHANG.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
Gold (Fine) ... ..	Statute Tons. ozs. 13,925	Metric Tons. kilos. 433	£ 59,149	Statute Tons. ozs. 8,955	Metric Tons. kilos. 278	£ 35,820§
Tin† ... ..	1,671†	1,698†	199,323	2,076	2,109	287,586

\* 159,447 of these persons were employed in opencast workings, 23,597 underground in mines, and 25,970 in hydraulic mining.

† Revised figures.

‡ Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore smelted at Singapore and elsewhere.

§ Export value.



## FEDERATED MALAY STATES—continued.

TABLE 351.

## PERAK.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Gold (Fine) ... ..	ozs. 1,277	kilos. 40	5,424			
Tin† ... ..	26,826†	27,256†	3,218,222	26,594	27,021	3,683,838

TABLE 352.

## SELANGOR.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Tin† ... ..	18,137†	18,428†	2,179,886	17,254	17,531	2,390,037

TABLE 353.

## DEATHS from ACCIDENTS at MINES during the Years 1904 and 1905.

State.	Number of persons killed.		Death-rate per 1,000 persons employed.	
	1904.	1905.	1904.	1905.
Negri Sembilan ... ..	8	4	·35	·16
Pahang ... ..	17	8	1·78	·79
Perak ... ..	30	33	·93	·33
Selangor... ..	24	22	·84	·30
Total ... ..	79	67	·41	·32

## Gambia.§

Vast ridges of ironstone exist in the Upper River territories, not far from the Gambia River, but are not worked.

## Gold Coast.||

The name of the Colony points to its mineral resources. The principal gold mines are situated in Wassaw, Sefwhi, and Southern Ashanti Districts. The gold exported in 1905 exceeded the quantity exported in 1904 by 66,689 ozs. The increase came from the mines in the Wassaw and Sefwhi districts. During the year satisfactory progress was made in dredging operations, eight dredges were at work, viz., four on the Offin River, two on the Birrim River, and two on the Ankobra River.

Gold is reported to exist in the Northern Territories of the Gold Coast, but at present operations have not advanced beyond the prospecting stage.¶

\* Not stated.

† Revised figures.

‡ Including the metal obtained by smelting on the spot, and the estimated quantity of metal contained in the exported ore smelted at Singapore and elsewhere.

§ "Gambia, Report for 1904." *Colonial Reports*, Annual, No. 452 [Cd. 2238-29], 1905.|| Official Return furnished by the Colonial Secretary of Gold Coast Colony, and *Colonial Reports*, Annual, No. 463 [Cd. 2684-11], London, 1905.¶ *Colonial Reports*, Annual, No. 457 [Cd. 2684-3], 1905, p. 11.

GOLD COAST—continued.

Salt is made in the marshes near Adda and Kwitta, but the quantity is not given.  
The ores of silver, mercury, lead, tin, copper, and iron have been found, and sandstone is abundant, but these minerals are not at present worked.

TABLE 354.  
PERSONS EMPLOYED at GOLD MINES during the Years 1904 and 1905.

Year.			Under-ground.	Above-ground.	Total.
1904...	...	...	6,103	10,941	17,044
1905...	...	...	3,703	9,266	12,969

TABLE 355.  
QUANTITY and VALUE of GOLD EXPORTED during the Years 1904 and 1905.

Metal.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
Gold ...	Ozs.	Kilos.	£	Ozs.	Kilos.	£
	104,460	3,249	386,500	171,149	5,323	653,820

TABLE 356.  
DEATHS from ACCIDENTS at GOLD MINES during the Years 1904 and 1905.

Year.	Under-ground.	Above-ground.	Total.	Death-rate per 1,000 persons employed.		
				Under-ground.	Above-ground.	Total.
1904 ...	11	3	14	1·80	·27	·82
1905 ...	21	6	27	5·67	·65	2·08

In 1905 "The Mining Rights Regulation Ordinance" (No. 8) was passed. It provides for the appointment of a Secretary for Mines, and of Inspectors of Mines. It also imposes upon Mine Managers certain duties, and gives the Governor in Council power to make rules for the working of mines.

India.\*

The most important minerals worked are :—coal, gold ore, manganese ore, mica, petroleum, and salt.

*Asbestos.*—Prospecting operations for this mineral are still being carried on in Ajmer-Merwara, and in Garhwal.

*Chromite.*—The chromite deposits in Baluchistan were discovered in 1901, but not worked until 1903. The output in 1905 was chiefly from the Quetta-Pishin district.

*Coal.*—With a total output of 8,417,739 tons of coal in 1905, India retains the lead as a coal producer amongst the Colonies of the British Empire. Nearly 86 per cent. of the coal produced in India during the year came from Bengal; the remainder was obtained from the Punjab, Central Provinces, Assam, Central India, Rajputana, the Nizám's Dominions, and Baluchistan.

The coal raised in Rajputana is lignite or brown coal; the output in 1905 amounted to 42,964 tons, and is included in the above total.

\* La Touche, *Records of the Geological Survey of India*, Vol. xxxiv., Part II., Calcutta. 1906; and information furnished by the Chief Inspector of Mines in India.



## INDIA—continued.

The resources of India as a coal-producing country are immense, and very large areas, rich in mineral fuel, have not yet been touched. The principal coal mines are in the following coalfields and districts:—Raniganj, Giridih, and Jherria in Bengal, Singareni in the Nizám's Territory, Lakhimpur in Upper Assam, Mohpani and Warora in the Central Provinces, and at Umaria in the Central Indian Agency. Very little coal is used for household purposes, the bulk of it is used for railway locomotives, as bunker coal for the steamers, and for steam raising at the mills.

*Copper.*—This mineral appears in the table of output for the first time. Although only two tons were raised in 1905, a serious effort is being made to develop copper mining on a considerable scale in India.

*Gems and Precious Stones.*—Upper Burma has long been famous for its rubies, and the mineral is, next to petroleum, the most profitable source of revenue amongst the Burmese minerals. In addition, Upper Burma yields jade, a small amount of inferior amber, and some tourmaline.

*Gold.*—The most important mineral industry in India, as regards the value of the output, is gold mining, although it employs only about one-third of the number of persons engaged in getting coal. The country occupies the seventh position amongst the leading gold-producing countries of the world; small quantities of the precious metal are washed from river sands in very many parts of the country, and dredging operations are being carried on with satisfactory results in the upper reaches of the Irawadi River, but the total amount so obtained is insignificant compared with the output of the quartz veins of Kolar, Mysore. The total production of gold in 1905 was 630,817 ozs., and the value of this quantity, £2,416,966, is equal to nearly twice the total value of the coal obtained in the same period.

At Dharwar in the Bombay Presidency gold mining is being developed on a large scale; the reefs are similar to those from which the Kolar gold is obtained. In 1905 only 93 ozs. of gold were obtained, but the mines are rapidly passing the prospecting and proving stage, and a large output may be expected in the near future.

In Mysore the output in 1905 was 616,258 ozs. (19,168 kilos.) of fine gold, and the number of persons employed in the gold mines was 30,328.

The remainder of the output was obtained from the Nizám's Dominions, Burma, Punjab, and the United Provinces.

*Iron.*—The various ores of iron, viz., magnetite, hematite, limonite, and clay ironstone, occur abundantly, and are smelted on a small scale by the aid of charcoal all over India. With the exception of Barakar, in Bengal, where the conditions for the manufacture of pig iron are favourable on account of the proximity of iron ore and good coking coal, and the smelting is carried on by modern methods, no successful attempt has been made to manufacture iron on a large scale.

*Manganese Ore.*—India now ranks as one of the world's greatest producers of manganese. During the year 1905 the output was 253,896 tons, an increase of 103,599 tons compared with the preceding year. The prosperous condition of the industry in 1905 was partly owing to the disturbances in Russia, but the ore is of so high a quality, yielding from 51 to 54 per cent. of metal, and can be worked by such simple methods of quarrying that the industry is practically certain to flourish and expand, with of course the natural fluctuations in sympathy with the world's market.

The ore occurs in enormous quantities in India, the chief deposits being near Kamptee in the Central Provinces, and in the Vizagapatam district, Madras. No mining is necessary at present, there being ample exposed deposits, many being hillocks above the surface of the surrounding country. Practically the whole of the manganese ore raised in India is exported.

*Mica.*—Quarrying and mining for mica are principally confined to the provinces of Bengal and Madras, but a small quantity is obtained in Ajmer-Merwara. The returns of the Indian production are reported to be considerably below the quantity actually obtained, and are much lower than the export figures. A large quantity of the poorer grade mica is used locally for ornamental purposes. The total value of the Indian mica is greater than that of the Canadian and United States combined.

*Petroleum.*—The oil wells in Upper Burma, where petroleum has been obtained for more than 2,000 years, furnished in 1905 over 142 million gallons, and Assam 2½ million gallons.



## INDIA—continued.

*Salt.*—The sources of the salt supply are: (a) rock-salt mines and quarries of the Punjab, Kohat, and Mandi State; (b) lakes and wells of Rajputana, wells and springs of the Punjab, and Upper Burma; (c) evaporation of sea water in Bombay, Sind, Madras, and Lower Burma. The production fluctuates with the seasons. The output for 1905 amounted to 1,193,466 tons. More than two-thirds of this quantity was made from sea water.

*Saltpetre.\**—The nitre of India is obtained from a natural efflorescence from the soil, especially in the province of Bihar. The crude earth is purified by solution, filtration, evaporation, and crystallization.

The area over which saltpetre is manufactured is estimated at 232,314 square miles; and according to the census of 1891 there were 119,558 saltpetre workers and sellers in India.

In the financial year 1904–5 there were 399 registered refineries at work in the Punjab and North-West Province, the United Provinces and Behar, which produced 15,777 tons of refined saltpetre. The quantity exported during 1905 was 15,656 tons.

*Slate.*—This mineral is quarried at Monghyr, Bengal, and in the Kangra Valley, and Rewari, Punjab. It is used for roofing, paving, &c.

*Soda Salts.*—The carbonate and the sulphate of soda accumulate in the soil of areas where the climate is dry, and both are prominent amongst the sodic compounds in the brine of the Rajputana salt lakes and are manufactured in like manner to saltpetre.

*Tin Ore.*—Although the principal deposit occurs in the Palganj estate, near the Barakar River, the only persistent attempts made to work tin have been in Burma, where it is obtained by washing river gravels; 75 tons of tin were produced in the Tavoy and Mergui districts in 1905.

Table 357 shows that the average number of persons working daily in and about Indian mines and quarries during the year 1905 was 152,579 as compared with 153,680 for the preceding year. It is difficult to obtain accurate statistics for the labour employed in Indian mines; the workers in many cases are paid daily and wander from one mine to another, and many only work in the mines when slackness of employment in the agricultural industry and other caste occupations give them some leisure.

TABLE 357.

PERSONS EMPLOYED in and about MINES and QUARRIES in INDIA for the Years ending 31st December 1904 and 1905.†

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
1904.							
Coal ... ..	46,474	17,738	64,212	19,724	9,057	28,781	92,993
Corundum ... ..	20	—	20	32	21	53	73
Gems ... ..	2,105	814	2,919	612	118	730	3,649
Gold ... ..	17,998	—	17,998	10,701	1,901	12,602	30,600
Jadeite ... ..	489	—	489	596	—	596	1,085
Iron Ore ... ..	32	10	42	261	171	432	474
Limestone ... ..	676	532	1,208	684	491	1,175	2,383
Magnesite ... ..	—	—	—	35	25	60	60
Manganese ore ... ..	1,810	1,130	2,940	781	724	1,505	4,445
Mica ... ..	5,349	3,296	8,645	2,478	2,469	4,947	13,592
Plumbago ... ..	438	64	502	214	—	214	716
Salt ... ..	700	435	1,135	188	6	194	1,329
Other minerals ... ..	513	8	521	1,395	365	1,760	2,281
Total ... ..	76,604	24,027	100,631	37,701	15,348	53,049	153,680†

\* Hooper, *Review of the Mineral Production in India for 1897*, Calcutta, 1898, p. 54.

† Report of the Chief Inspector of Mines in India for the year ending 31st December, 1905, Calcutta, 1906, and information furnished by the Chief Inspector of Mines.

‡ Including persons employed in Native States.



[INDIA—continued.

TABLE 357—continued.

PERSONS EMPLOYED in and about MINES and QUARRIES in INDIA for the  
Years ending the 31st December 1904 and 1905—cont.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above ground.
	Males.	Females.	Total.	Males.	Females.	Total.	
1905.							
Coal ... ..	42,889	17,324	60,713	20,178	9,100	29,278	89,991
Corundum ... ..	—	—	—	—	—	—	—
Gems ... ..	153	—	153	1,640	—	1,640	1,793
Gold ... ..	21,360	—	21,360	9,250	2,145	11,395	32,755
Iron Ore ... ..	112	14	126	218	38	256	382
Manganese ore ... ..	2,019	1,331	3,350	1,459	1,188	2,647	5,997
Magnesite ... ..	25	35	60	15	30	45	105
Mica ... ..	5,203	3,548	8,751	3,269	3,559	6,828	15,579
Plumbago ... ..	343	—	343	231	43	274	617
Salt ... ..	641	480	1,121	73	2	75	1,196
Slate, &c. ... ..	1,318	493	1,811	1,694	659	2,353	4,164
Total ... ..	74,063	23,725	97,788	38,027	16,764	54,791	152,579*

TABLE 358.

SUMMARY of OUTPUT and VALUE of MINERALS during the Years 1904 and 1905.†

Mineral.	1904.‡			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alum ... ..	129	131	700	356	361	2,038
Amber ... ..	(Not stated)	—	838	6	6	945
Chromite ... ..	3,596	3,654	4,137	2,708	2,751	3,482
Clay   ... ..	—	—	—	1,075,097	1,082,350	76,291
Coal ... ..	8,216,706	8,348,561	1,398,826	8,417,739	8,552,422	1,436,951
Copper ore ... ..	—	—	—	41	42	4,200
Diamonds ... ..	carats 286	grams. 59	2,636	carats 172	grams. 34	2,474
Gold ... ..	ozs. 618,746	kilos. 19,245	2,366,079	ozs. 630,817	kilos. 19,621	2,416,966
Graphite ... ..	3,256	3,308	16,726	2,324	2,361	16,890
Gypsum ... ..	3,875	3,937	129	4,800	4,877	160
Iron ore ... ..	71,608	72,757	12,617	102,120	103,759	13,827
Jadestone... ..	189	192	50,726	134	136	45,474
Magnesite ... ..	1,315	1,336	876	2,063	2,096	1,375
Manganese ore ... ..	150,297	152,707	129,632	253,896	257,970	82,979§
Mica ... ..	979	995	97,932	1,282	1,303	83,495
Petroleum ... ..	gals. 118,491,382	475,869	473,971	gals. 144,798,444	551,519	604,203
Rubies ... ..	carats 265,901	grams. 54,618	90,612	carats 266,584	grams. 54,780	88,340
Salt ... ..	1,104,198	1,121,918	412,851	1,193,466	1,212,618	407,129
Saltpetre ... ..	19,548	19,862	266,349	20,367	20,694	235,723
Slate   ... ..	(Not stated)	—	4,628	74,527	75,723	5,550
Steatite ... ..	17	17	540	12	12	341
Stone (granite, limestone, and sandstone)   ... ..	—	—	—	—	—	55,972
Tin ore ... ..	71	72	8,353	75	76	9,783
Tourmaline ... ..	—	—	—	lbs. 161	kilos. 73	1,500
Total Value ... ..	—	—	5,839,158	—	—	5,596,088

\* Including persons employed in Native States.  
† Records of the Geological Survey of India, Vol. xxxiv., Part II., Calcutta, 1906.  
‡ Revised figures.  
|| Returns incomplete.  
§ The export value of the manganese ore is given as £248,309 on p. 47 of Vol. xxxiv., and the mine value as £82,979 on p. 57 of the same Vol.

## INDIA—continued.

TABLE 359.

OUTPUT and VALUE of MINERALS, classified according to the PROVINCES or STATES, for the Years 1904 and 1905.\*

Mineral and Province or State where wrought.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
INDIA.						
Assam.	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal ... ..	266,765	271,048	84,592	277,065	281,511	87,809
Petroleum ... ..	gals. 2,585,920	10,385	(Not stated)	gals. 2,733,110	10,976	†
Bengal.						
Coal ... ..	7,063,680	7,177,035	1,015,147	7,234,103	7,350,193	1,041,710
Iron ore ... ..	63,015‡	64,026	11,103‡	97,698	99,266	13,026
Mica ... ..	658	669	59,187	730	742	24,796
Salt ... ..	88	89	(Not stated)	3	3	(Not stated)
Saltpetre ... ..	19,548	19,862	266,349	20,367	20,694	235,723
Slate ... ..	—	—	—	216	219	2,484
Madras.						
Graphite ... ..	—	—	—	64	65	465
Magnesite ... ..	1,315	1,336	876	2,063	2,096	1,375
Manganese ore ... ..	53,699	54,560	(Not stated)	63,695	64,717	20,817
Mica ... ..	317§	322	38,618	414	421	58,699
Salt ... ..	356,834	362,560	(Not stated)	388,670	394,907	(Not stated)
Bombay, including Sindh.						
Gold ... ..	—	—	—	ozs. 93	kilos 3	320
Mica ... ..	4	4	132	—	—	—
Salt ... ..	443,949	451,073	(Not stated)	439,366	446,417	(Not stated)
Burma.						
Amber ... ..	(Not stated)	—	838	6	6	945
Coal ... ..	1,105	1,123	294	—	—	—
Copper Ore ... ..	—	—	—	41	42	4,200
Gold ... ..	ozs. 216	kilos. 7	810	ozs. 621	kilos. 19	2,419
Jadestone ... ..	189	192	50,726	134	136	45,474
Petroleum ... ..	gals. 115,903,804	465,477	(Not stated)	gals. 142,063,846	570,537	604,203
Rubies ... ..	carats 265,901	grams. 54,618	90,612	carats 266,584	grams. 54,760	88,340
Salt ... ..	20,532	20,861	(Not stated)	23,133	23,503	(Not stated)
Steatite... ..	17	17	540	12	12	341
Tin ore... ..	71	72	8,353	75	76	9,783
Tourmaline ... ..	—	—	—	lbs. 161	kilos 73	1,500
Central Provinces.						
Coal ... ..	139,027	141,258	43,664	147,265	149,628	46,241
Manganese ore ... ..	85,034	86,398	(Not stated)	159,950	162,517	52,275

\* Records of the Geological Survey of India, Vol. xxxiv., Part II., Calcutta, 1906.

† Included with value of Burma.

‡ Estimated.

§ Exported.

|| Including Value of Punjab and Assam petroleum.



## INDIA—continued.

OUTPUT and VALUE of MINERALS, classified according to PROVINCES or STATES, for the Years 1904 and 1905—continued.

Mineral and Province or State where wrought.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
INDIA—cont. Punjab.	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Alum ... ..	129	131	700	356	361	2,038
Coal ... ..	45,594	46,326	22,144	62,622	63,627	31,311
Gold ... ..	ozs. 370	kilos 12	1,379	ozs. 176*	kilos. 6	703‡
Petroleum ... ..	gals. 1,658	7	(Not stated)	gals. 1,488	6	†
Salt ... ..	282,421†	286,953	(Not stated)	342,210§	347,702	(Not stated)
Slate ... ..	—	—	—	62,986	63,997	1,867
Native States.						
Chromite ... ..	3,596	3,654	4,137	2,708	2,751	3,482
Coal ... ..	700,535	711,777	232,983	696,684	707,804	229,881
Diamonds ... ..	carats. 286	grams. 59	2,636	carats 17‡	grams. 34	2,474
Gold ... ..	ozs. 618,160	kilos. 19,227	2,363,890	ozs. 629,925	kilos. 19,593	2,413,517
Graphite ... ..	3,256	3,308	16,726	2,260	2,296	16,425
Gypsum ... ..	3,875	3,987	129	4,800	4,877	160
Iron ore ... ..	8,593	8,731	1,514	4,422	4,493	801
Manganese ore ... ..	11,564	11,749	(Not stated)	30,251	30,736	9,886
Mica ... ..	—	—	—	138	140	1,000
Marble ... ..	1,034	1,051	1,102	1,726	1,754	1,840
Salt ... ..	66,381¶	67,446	(Not stated)	84¶	85	(Not stated)
Slate ... ..	—	—	—	11,325	11,507	1,199

TABLE 360.

NUMBER of DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1904 and 1905.\*\*

Class of Mines or Workings.	1904.			1905.		
	Number of Deaths.			Number of Deaths.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	55	12	67	51	9	60
Gems ... ..	2	—	2	4	—	4
Gold†† ... ..	43	3	46	71	6	77
Manganese ... ..	1	—	1	3	—	3
Mica ... ..	11	1	12	4	—	4
Salt ... ..	—	—	—	—	—	—
Slate, &c. ... ..	1	1	2	—	1	1
Total ... ..	113	17	130	133	16	149

\* Excluding the quantity and value for Umballa district.

† Including output of Rajputana.

‡ Included with value of Burma.

§ Production of Northern India, including Punjab and North West Frontier Province.

|| Estimated.

¶ Exclusive of a large quantity included under Punjab.

\*\* Report of the Chief Inspector of Mines in India for the year ending 31st December, 1905, Calcutta, 1906.

†† Including Mysore Gold Mines.

## INDIA—continued.

TABLE 361.

DEATH-RATE from ACCIDENTS at MINES and QUARRIES during the Years 1904 and 1905.\*

Class of Mines or Workings.	1904.			1905.		
	Death-rate per 1,000 Persons Employed.			Death-rate per 1,000 Persons Employed.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal ... ..	·86	·42	·72	·84	·31	·67
Gems ... ..	·69	—	·55	26·14	—	2·23
Gold† ... ..	2·39	·24	1·50	3·32	·53	2·35
Manganese .. ...	·34	—	·22	·90	—	·50
Mica ... ..	1·27	·20	·88	·46	—	·26
Salt ... ..	—	—	—	—	—	—
Slate, &c. ... ..	1·92	·57	·88	—	·42	·24
Total ... ..	1·12	·32	·85	1·36	·29	·98

TABLE 362.

DEATHS from ACCIDENTS at the MYSORE GOLD MINES.‡

Year.	Persons Employed.	Deaths.			Death-rate per 1,000 Persons Employed.		
		Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
1901 ... ..	25,060	61	14	75	4·29	1·29	2·99
1902 ... ..	26,268	52	6	58	3·30	·57	2·21
1903 ... ..	27,355	58	11	69	3·29	1·13	2·52
1904 ... ..	29,494	42	3	45	2·38	·25	1·52
1905 ... ..	30,328	70	6	76	3·46	·59	2·51
Average death-rate	—	—	—	—	—	—	2·33

The number of deaths in Indian mines is steadily increasing, this is partly due to more accurate returns, and partly to the expansion of the mineral industry. The most serious accident during the year occurred at Nandidroog Mine in the Kolar goldfields. A lighted candle, left sticking to the planks of a shoot, set fire to the timber, and 21 persons who were working in a lower level were suffocated. Another accident in the Kolar goldfields involved the loss of eight lives. A round of shots had been fired in a sinking pit, one or more had missed fire, and there was an explosion whilst the coolies were removing the loose rock.

*New Mining Regulations.*—During the year 1906, the 26 Rules already in force under the Indian Mines Act, 1901, were supplemented by the addition of 28 Rules. These rules apply to all coal-mines in British India, and relate to Mine Managers' Certificates, the conditions on which they are granted, and the qualifications which the Managers of

\* Report of the Chief Inspector of Mines in India for the year ending 31st December, 1905, Calcutta, 1906.

† Including Mysore Gold Mines.

‡ Official Returns furnished by the Chief Inspector of Mines in India, and the Officiating Secretary to the Government Geological Department of Mysore.



## INDIA—continued.

the various classes of mines must possess. Many principles new to such regulations are embodied in these Rules. Briefly, the provisions are as follows:—For the purposes of management, a mine is defined as a system of underground workings interconnected in such a manner that communication is practicable from any one part of the system to any other part by means of underground channels. If access from one system of underground workings to another such system is not practicable without coming to the surface of the ground, each such system shall be deemed to constitute a separate mine. No person without the sanction of the Chief Inspector of Mines may act as manager of more than one such mine. Mines with more than 150 persons underground or with an average output of 1,800 tons a month must be under the management of holders of first class certificates, and mines with a smaller number of persons underground or with a smaller output may be managed by holders of second class certificates, but for mines with less than 50 persons underground or with an output of less than 600 tons a month, a manager holding a "permit" from the Chief Inspector of Mines will suffice. The certificates are granted by a Board of Examiners with the Chief Inspector, *ex officio*, president. Permits are granted and withdrawn by the Chief Inspector, who has absolute discretion.

Certificates of Service are to be granted by the Board of Examiners to persons acting as Managers of mines at the time the rules come into force. Certificates of Competency will be granted by the same body to persons passing an examination conducted by local examiners.

One of the Rules (No. 35) gives power to the Board of Examiners to grant *without examination* to any person holding a first or second class certificate granted under the Mines Act for the time being in force in the United Kingdom or in any British Colony, a certificate of a similar class under the Indian rules.

The appointment of the local examiners is vested in the Board of Examiners, who are the controlling body for the purposes of these Rules, and are directed to take steps to ensure, as far as is practicable, that the standard of knowledge which a candidate must attain before he obtains a certificate of either class shall be uniform throughout British India.

## Jamaica.\*

During the year 1904-5 copper ore to the value of £21 was exported from the island. This fact is interesting, as one of the principal rivers in Jamaica was called by the Spaniards the Rio Cobre (Copper Mine River).

## Labuan. (See BRITISH BORNEO.)

## Leeward Islands. (See DOMINICA, REDONDA, and VIRGIN ISLANDS.)

## Malta.†

According to the last census, taken in the year 1901, 1,060 persons were employed in the quarries of the Colony.

50,047 slabs, 529 blocks, and 450 tons in blocks of stone were exported in the year ended March 31st, 1906. A hard, compact coralline limestone is quarried at Gozo, and in the neighbourhood of Musta. A soft granular sandstone is obtained in the central parts of Malta, and used for building purposes.

An attempt was made to work the phosphate deposits of the colony, but owing to their shallowness and the low percentage of soluble phosphates it failed.

Clay or blue marl is obtained and used for making pottery.

## Natal (including ZULULAND).‡

The output of coal in 1905, which exceeded a million tons, has increased 31 per cent. compared with that of 1904. In 1905 there were 24 electrical coal-cutters and 53 worked by compressed air, in operation, as against 18 of the former kind and 29 of the latter in 1904; 46 per cent. of the total output of coal was obtained by machines.

\* Gov. J. A. Swettenham, "Jamaica. Report for 1904-5." *Colonial Reports—Annual*, No. 492 [Cd. 2684-38], 1906.

† Deputy Gov. Barron, "Malta. Report for 1905-6." *Colonial Reports—Annual*, No. 498 [Cd. 2684-44], and Official Return furnished by the Chief Secretary to the Government of Malta.

‡ *Reports on the Mining Industry of Natal for 1904 and 1905*. Pietermaritzburg.

NATAL—continued.

In addition to coal, the Colony is stated to possess deposits of asbestos, copper ore, gold ore, graphite, gypsum, iron ore, lead ore, limestone, marble, mica, molybdenum, nickel ore, nitre, oil shale, and slate. During the year 1905 the development of the workings of several of these minerals was continued.

TABLE 363.  
PERSONS EMPLOYED at PRODUCING COLLIERIES during the Years 1904 and 1905.

	Year.	Below-ground.	Above-ground.	Total.
	1904	3,066	1,726	4,792
	1905	3,834	1,816	5,650(a)

(a) In addition to these persons, 563 were employed on unproductive work at producing collieries, 39 at non-producing collieries, and 372 in prospecting and mining (not at collieries), making a total of 6,624 persons engaged in the mineral industry in 1905, as against a total of 5,445 in 1904.

TABLE 364.  
QUANTITY and VALUE of COAL and GOLD produced during the Years 1904 and 1905.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons. cwts. 9*	Metric Tons.	£
Asbestos ...	—	—	—	—	—	—
Coal ...	858,298	872,072	457,000	1,129,407	1,147,531	467,162
Copper ore...	100*	90	Not stated.	—	—	—
Gold (fine) ...	—	—	—	ozs. 108	kilos. 3	458
Graphite ...	—	—	—	4*	4	—
Lime ...	729	740	2,104	1,080	1,097	2,990
Molybdenum ore...	66*	67	Not stated.	—	—	—

TABLE 365.  
DEATHS from ACCIDENTS at PRODUCING COLLIERIES during the Years 1904 and 1905.

Year.	Under-ground.			Above-ground.			Total Under-ground and Above-ground.	Death-rate† per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
1904	15	—	15	1	—	1	16	3·04
1905	22	—	22	—	—	—	22	3·54

No deaths occurred in 1904 and 1905 at collieries which had not reached the production stage. One death occurred at mines and works other than collieries, equal to a death-rate of 2·69 per 1,000 persons employed.

Newfoundland.‡

The important mineral exports from Newfoundland are copper ore, copper regulus, and iron ore.

Coal.—The coal boring operations commenced in 1904 near Goose Brook were continued in 1905. A seam of coal 2½ feet thick has been discovered 60 feet below the old seam found in 1895.

Copper Ore.—The total output of copper ore shows a decrease of 29,119 tons compared with that of 1904. After a period of continuous operations for 42 years, the Union Mine at Tilt Cove is reported to show signs of exhaustion.

\* These quantities are only samples obtained for test purposes.  
† Death-rate calculated on the number of persons employed at producing and non-producing collieries.  
‡ Report on the Mineral Resources for 1905, by J. P. Howley, Director of Geological Survey of Newfoundland, 1906.



## NEWFOUNDLAND—continued.

*Gold.*—The only property on which any attempt at gold mining was made in 1905 was at Goldenville, near Ming's Bight. Some prospecting was done at the Cinq Cerf locations.

*Iron Ore.*—The whole of the ore comes from Bell Island, Conception Bay, where valuable deposits of red hæmatite are being mined on a large scale; the ore is shipped to Nova Scotia and to the United States. The output in 1905 shows an increase of 100,000 tons as compared with the previous year.

*Petroleum.*—Several wells have been sunk for the purpose of obtaining petroleum. The yield in 1904 was 700 barrels of oil.

*Slate.*—There is an abundance of excellent slate in Newfoundland, and it only awaits capital to improve the industry. Most of the output is exported to England.

*Talc.*—The deposit of talc near Manuel's was worked during part of the year, and 6,000 tons were shipped to the United States.

TABLE 366.

PERSONS EMPLOYED at MINES and QUARRIES during the Years 1904 and 1905.

Kind of Workings.					1904.	1905.
Copper mines	...	...	...	...	569	570
Iron ore workings	...	...	...	...	1,131	1,145
Pyrites "	...	...	...	...	285	230
Gold mines	...	...	...	...	10	30
Barytes	...	...	...	...	28	—
Slate quarries	...	...	...	...	137	130
Talc "	...	...	...	...	100	55
Other "	...	...	...	...	115	124
Total	...	...	...	...	2,375	2,284

TABLE 367.

QUANTITY and VALUE of the MINERALS produced during the Years 1904 and 1905.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Barytes	2,000	2,032	1,027	—	—	—
Copper ore and regulus*	107,839	109,570	95,905	78,720	79,983	73,742
Gold	ozs. 11	gr. 344	43	—	—	—
Granite	1,945	1,976	2,373	—	—	—
Iron ore	589,739	599,203	121,179	689,970	701,042	141,775
Iron pyrites	60,200	61,166	43,295	50,720	51,534	47,164
Petroleum	bls. 700	—	233	—	—	—
Sand and gravel	2,300	2,337	1,192	1,048	1,065	538
Slate	2,700	2,743	7,767	3,958	3,990	9,247
Stone:—						
Cobble	4,000	4,064	411	4,100	4,166	349
Building	3,100	3,150	955	1,000	1,016	308
Other	—	—	—	10,000	10,160	3,018
Talc	1,562	1,587	1,438	6,000	6,000	4,932
Not specified	—	—	41	—	—	83
Total Value	—	—	275,859	—	—	281,156

\* The copper ore contains a little gold. It is estimated that 2,814 tons of metallic copper and 5,578 ozs. of fine gold were obtainable from the copper ore in 1905.

NEWFOUNDLAND—continued.

TABLE 368.

DEATHS from ACCIDENTS at MINES and QUARRIES during the Years 1904 and 1905.

Kind of Workings.	1904.		1905.	
	Number of Persons Killed.	Death Rate per 1,000 Persons Employed.	Number of Persons Killed.	Death Rate per 1,000 Persons Employed.
Copper Mines .. ..	2	3.51	—	—
Iron Ore Workings ... ..	1	.88	3	2.62
Pyrites Workings ... ..	—	—	3	13.04
Slate Quarries ... ..	1	7.30	—	—
Total ... ..	4	1.68	6	2.63

New Guinea (see BRITISH NEW GUINEA).

New Zealand.\*

The three principal minerals worked in New Zealand are coal, gold, and kauri gum.

*Coal.*—The output of coal for the Colony continues to increase steadily. The number of collieries at work during the year was 177 as compared with 168 in the previous year. The most important both as regards quantity and quality of coal produced are situated near Westport, on the west coast of the Middle Island. More than one-third of the total output of New Zealand is brown coal or lignite, most of which is obtained in the Southern district of Middle Island; many of the workings are open-cast.

The output from the coal mines which are being worked by the State under “The State Coal Mines Act, 1901,” was at Point Elizabeth 131,816 tons, and at Seddonville 46,085 tons during the year ended 31st March, 1906.† The result of the year’s working shows a profit of £21,313 for Point Elizabeth Colliery and a loss of £3,838 for Seddonville Colliery.

*Copper Ore.*—Several mineral licences for copper have been taken up, and some development work has been done during the year 1905.

*Gold.*—The output of gold in 1905 shows a slight increase compared with that of 1904. The precious metal occurs in various parts of the Islands; it is extracted by ordinary alluvial diggings, by hydraulic mining, by dredging river beds and river flats, and by quartz mining. Probably there is more gold dredging in New Zealand than in any other part of the world, and this branch of mining finds employment for more than 2,000 persons in the Colony. During the year 185 dredges were at work, as against 186 in 1904.

*Iron Ore.*—Work on the enormous deposits of iron ore at Parapara has now been commenced.

*Kauri Gum.*—Digging kauri gum upon the sites of old pine forests affords employment to a large number of Europeans and natives.

*Petroleum.*—Oil is reported to have been struck in the borehole at Moturoa, near Plymouth.

*Phosphate of Lime.*—Deposits of phosphate of lime discovered in the spring of 1902 are being worked near Milton, Otago.

*Scheelite.*—This mineral is mined at Macrae’s Flat, Otago.

\* Hon. James McGowan, *New Zealand, Mines Statement*. Wellington, 1906, and *Report of the Department of Mines on the Goldfields of New Zealand for the year 1905*, Wellington, 1906.

† *New Zealand. Report on the working of State Coal Mines for the year ending 31st March, 1906*, Wellington, 1906.



NEW ZEALAND—continued.

TABLE 369.

PERSONS EMPLOYED at COAL MINES during the years 1904 and 1905.\*

	Year.	Under-ground.	Above-ground.	Total.
	1904	2,525	763	3,288
	1905	2,436	833	3,269

TABLE 370.

PERSONS EMPLOYED at GOLD MINES during the Years 1904 and 1905.†

Mining District.	Alluvial Miners.		Quartz Miners.		Total.		Grand Total.	
	European.	Chinese.	European.	Chinese.	European.	Chinese.	1905.	1904.
Auckland .. ...	—	—	2,584	—	2,584	—	2,584	3,734
Marlborough ... ..	69	—	10	—	79	—	79	72
Nelson ... ..	1,036	180	749	—	1,785	180	1,965	2,237
Westland ... ..	1,388	270	24	—	1,412	270	1,682	1,812
Otago ... ..	2,508	353	191	—	2,699	353	3,052	3,043
Total ... ..	5,001	803	3,558	—	8,559	803	9,362	10,898

TABLE 371.

QUANTITY and VALUE of MINERALS produced during the Years 1904 and 1905.‡

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal (including Brown Coal and Lignite).	1,537,838	1,562,517	826,207	1,585,756	1,611,204	838,531
Coke (exported) ... ..	—	—	—	15	15	15
Copper ore ... ..	—	—	—	4	4	17
Gold ... ..	ozs. 520,323	kilos. 16,184	1,987,501	ozs. 520,485§	kilos. 16,189	2,093,936
Iron ore (Haematite)   ... ..	7	7	96	—	—	—
Kauri gum ... ..	9,203	9,351	501,817	10,883	11,058	561,444
Manganese ore ... ..	196	199	570	55	56	165
Silver ... ..	ozs. 1,094,461	kilos. 34,042	112,875	ozs. 1,719,744	kilos. 36,694	120,542
Sundry mixed minerals ... ..	1,404	1,427	10,168	632	642	8,136
Total value ... ..	—	—	3,439,234	—	—	3,622,786

\* New Zealand, *Inspection of Coal Mines Reports*. C.—3a, Wellington, 1905 and 1906.  
† Hon. James McGowan, *New Zealand, Mines Statement*. Wellington, 1906. C.—2, p. 16.  
‡ Hon. James McGowan, *New Zealand, Mines Statement*. Wellington, 1906. C.—2, pp. 2 and 10.  
§ Containing 492,954 ozs. of fine gold.  
|| Used for paint.

NEW ZEALAND—continued.

TABLE 372.

DEATHS from ACCIDENTS at MINES and DREDGING WORKS during the  
Years 1904 and 1905.\*

Kind of Workings.	1904.		1905.	
	Number of Deaths.	Death-rate per 1,000 Persons Employed.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
Coal mines ... ..	4	1·22	6	1·84
Gold mines ... ..	6	1·26	7	1·97
„ alluvial, hydraulic, sluicing and dredg- ing.	9	1·47	14	2·41
Total ... ..	19	1·34	27	2·14

Northern Nigeria. (See also SOUTHERN NIGERIA.)

A Mineral Survey of this Protectorate is being made, and the specimens found are periodically forwarded to the Imperial Institute, London, for analysis. The work of the survey is being carried on under the general supervision of Professor W. R. Dunstan, F.R.S., whose reports† contain full particulars of the minerals and the locality where they are found.

Specimens of the following minerals have been found and reported on :—Alkali salts, red and yellow ochres, tin ore, limestone, kaolin, monozite.

Tin ore is being worked by the Niger Company in the Bauchi Province and smelted on the spot. It is anticipated that as soon as suitable transport is provided Northern Nigeria will become an important tin-producing country.

Salt is obtained from brine springs at Awe and elsewhere, and the present output is estimated at 277 tons per annum.

Monazitic sand occurs in certain river beds in the Protectorate.

North Borneo. (See BRITISH BORNEO.)

Nova Scotia. (See CANADA.)

Ontario. (See CANADA.)

Orange River Colony.‡

Coal.—The Colony possesses excellent coalfields, and the coal seams vary in thickness from one or two inches to 40 feet. Several mines have now entered the producing stage ; at present the “ Vierfontein ” mine has the largest output in the colony.

\* Hon. James McGowan, *New Zealand, Mines Statement*. Wellington, 1906. C.—2, p. 9.  
† “ Northern Nigeria ” *Colonial Reports*—Miscellaneous, No. 26 [Cd. 1939], London, 1904 and No. 32 [Cd. 2875], 1906.  
‡ Orange River Colony Mines Department, *Annual Reports* for the years ending 30th June, 1905 and 1906, Bloemfontein.



## ORANGE RIVER COLONY—continued.

*Diamonds.*—The principal mines are the Jagersfontein, Koffyfontein, Lace, Roberts Victor, and the Orange Free State and Transvaal. During the year ended December, 1905, the total output of diamonds was 297,166 carats, valued at £853,834, and of this quantity the Jagersfontein Mine produced 256,001 carats. The production of this important mine for the year ended 31st March, 1906, was 255,841 carats, of £810,522 value, which is equivalent to an average value of 63s. 4·33d. per carat.\*

The opening of the Klerksdorp—Fourteen Streams Railway, giving easy access to the diamond workings, has recently caused a considerable rush of diggers to the Vaal River locality. The alluvium in which the diamonds are found exists in two separate beds one overlaying the other by about 50 feet, the bottom one being practically the level of the present river bed.

*Petroleum.*—With a view to encourage prospecting for petroleum the Government has decided to purchase a Canadian oil drill, with the object of leasing it to prospectors. Indications of oil all over the Colony are reported to have been discovered.

*Salt.*—Although salt springs occur in several places in the Colony, they are only worked at two places to any extent, viz., at Zoutpan in the Jacobsdal district, and at Haagenstad in the Bloemfontein district. At present the Jacobsdal works produce considerably more than all the others combined. The salt is obtained by natural evaporation in large open dams.

With regard to other minerals, prospecting for gold is still being carried on, and it is reported that the reefs discovered in the Vredefort district belong to the Witwatersrand series. Tin has been found in the Caledon River, and copper, iron, lead, silver, sulphur, &c., are known to exist in the Colony.

TABLE 373.

AVERAGE NUMBER of PERSONS EMPLOYED† at COAL and DIAMOND MINES during the Years ended December, 1904 and 1905.

Kind of Mines.	1904.			1905.		
	Number of Persons.			Number of Persons.		
	White.	Coloured.	Total.	White.	Coloured.	Total.
Coal ... ..	121	942	1,063	86	857	943
Diamond ... ..	587	4,435	5,022	561	4,785	5,346
Total ... ..	708	5,377	6,085	647	5,642	6,289

TABLE 374.

QUANTITY and VALUE of MINERAL produced during the Years ended 31st December, 1904 and 1905.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal ... ..	129,911	131,996	66,745	164,640	167,282	63,498
Diamonds ..	Carats 284,604	Kilos 58	866,111	Carats 297,166	Kilos. 61	853,834
Salt... ..	5,529‡	5,618	8,928	9,920§	10,079	16,115
Total Value	—	—	941,784	—	—	933,447

\* *The New Jagersfontein Mining and Exploration Company, Ltd. Eighteenth Annual Report and Accounts for the year ended 31st March, 1906.* Kimberley, 1906. Page 13.

† Excluding persons employed in "prospecting."

‡ Output for year ended June, 1905.

§ " " " " 1906.

ORANGE RIVER COLONY—continued.

TABLE 375.

Number of deaths from accidents at mines during the years ended December, 1904 and 1905.

Kind of Mines.	1904.		1905.	
	Number of persons killed.	Death-rate per 1,000 persons employed.	Number of persons killed.	Death-rate per 1,000 persons employed.
Coal ... } Diamond ... }	19	3·12	28	4·45

Quebec. (See CANADA.)

Redonda\* (Leeward Islands).

On an average 99 persons were employed in getting phosphate during the year 1904. In 1905 no phosphate of alumina was exported from Redonda.

TABLE 376.

QUANTITY and VALUE of MINERAL produced during the Years 1904 and 1905.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Phosphate of alumina ...	1,702	1,729	2,160	Nil.	—	—

Rhodesia.†

The mining industry of Rhodesia made very satisfactory progress in 1905 ; gold, coal, silver and lead all show an increased production, and the total value of the mineral output was more than half as much again as in 1904.

*Coal.*—97,191 tons of coal were obtained from the Wankie coalfield, which is situated 140 miles north-west of Bulawayo. The coal is reported as being of excellent quality.

*Copper.*—Ores of this metal exist in the Lo Mogundi, and Victoria districts of Southern Rhodesia. In North Western Rhodesia numerous deposits of copper ore have been discovered and a considerable amount of development work is being done upon them.

*Gold.*—The auriferous deposits are very extensive, and the output of gold in 1905 was 409,836 ounces, or 142,099 ounces more than the preceding year. The average number of stamps at work during the year ended March 31, 1906, was about 757, and the total quantity of quartz crushed was 1,114,590 tons.

*Lead and Zinc.*—Important deposits of these minerals have been discovered at the Broken Hill Mine, in North Western Rhodesia, and as soon as the railway is made, a continuous output is assured. The whole of the output of lead for 1904 and 1905 was obtained from the Penhalonga Proprietary Mines.

Further prospecting of the country has been rewarded by discoveries of diamonds and other precious stones and wolfram and chrome ores.

\* Information furnished by the London Phosphate Syndicate, Ltd.

† Report of the British South Africa Company for the year ending 31st March, 1906 ; the Eleventh Annual Report of the Rhodesia Chamber of Mines for the year ended 31st March, 1906, Bulawayo, 1906 ; and information furnished by the British South Africa Company.



## RHODESIA—continued.

TABLE 377.

Average number of persons employed at mines during the year ended 31st December, 1905.

Province.	Persons employed.			
	Under-ground.	Above-ground.	Unclassified.	Total.
Matabeleland ... ..	5,221	4,219	274	9,714
Mashonaland ... ..	2,890	1,775	221	4,886
Total ... ..	8,111	5,994	495	14,600

The average number of persons employed at mines during the year ended 31st March, 1905, was 11,717.

TABLE 378.

QUANTITY and VALUE of MINERALS produced during the years ended 31st December, 1904 and 1905.

Mineral.*	1904.			1905.		
	Quantity.		Estimated Value.	Quantity.		Estimated Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Coal ... ..	59,678	60,636	41,492	97,191	98,751	55,066
Gold ... ..	ozs. 267,737	kilos. 8,327	969,342	ozs. 409,836	kilos. 12,747	1,483,573
Lead ... ..	455	462	5,005	570	579	6,456
Silver ... ..	ozs. 70,146	kilos. 2,182	7,811	ozs. 89,278	kilos. 2,777	9,962
Total Value ... ..	—	—	1,023,650	—	—	1,555,057

The number of persons killed by accidents in mines during the year 1905, is not given in the Report of the Chamber of Mines.

## St. Helena.\*

Large deposits of manganese ore of good quality exist in St. Helena. Investigations have recently been made and there is some likelihood of the deposits being worked.

## St. Lucia.†

A sulphur mine exists at Ventine in the Soufrière district, but the proposal to work it has fallen through.

## Sarawak. (See BRITISH BORNEO.)

## Somali Coast Protectorate.‡

Nothing definite is known as to the mineral resources of the country as it does not appear to have been prospected, but mica has been found and there are indications of iron ore.

## Southern Nigeria.§

A mineral survey of Southern Nigeria similar to that referred to under "Northern Nigeria" is being made under Professor Dunstan's supervision.

Deposits of lignite or brown coal have been discovered at several places in the Ibusa-Okpenam district.

Lead ore containing silver is found and worked near Omoso, and the metal obtained by smelting by the natives is used as currency.

\* Governor Gallwey. "St. Helena Report for 1905." *Colonial Reports*—Annual, No. 486 [Cd. 2684-32.] London, 1906, p. 32.

† Sir R. B. Llewelyn. "St. Lucia Report for 1905." *Colonial Reports*—Annual, No. 505. [Cd. 2684-51.] London, 1906, p. 14.

‡ Consul-General Hayes Sadler, "Trade of the Somali Coast for the year 1898-1899." *Dipl. and Cons. Reports*, No. 2,384, Ann. Ser., 1900 [Cd. 1-21], and Acting-Commissioner Cordeaux "Report on the Trade and Commerce of the Somaliland for the year 1902-3 [Cd. 1935], 1904.

§ "Southern Nigeria." *Colonial Reports*—Miscellaneous, No. 33. [Cd. 2876]. London, 1906.



## SOUTHERN NIGERIA—continued.

Tin ore of good quality exists in the Akwa-Ibama district, the ore yielding about 75 per cent of metallic tin.

Monazite has been found in the gravels of certain river beds in the Netim-Ibum, district.

Limestone of excellent quality for the manufacture of mortar and cement has also been discovered.

Manganese ore has been traced in the neighbourhood of Oban.

## Straits Settlements.\*

There are no mines of importance in the Straits Settlements proper, viz., Penang, Province Wellesley, Malacca and Singapore; the value of the alluvial tin from Malacca in 1901 was £136, and in 1902 only £60.

Laterite is quarried for road metalling in Singapore and Malacca, and granite in the islands to the east of Singapore.

## Transvaal.†

Coal, diamonds and gold are the principal minerals worked in the Colony.

*Coal.*—The output for 1905 is the highest for any one year in the history of the Transvaal. About 43 per cent. of the total quantity came from the Springs-Brakpan area, and 49 per cent. from the Middelburg area.

*Diamonds.*—A decrease is shown in the output in 1905 compared with that of the preceding year. The greater portion of the diamonds were obtained at the Premier Mine. 799,763 carats were found in the Pretoria district, 2,303 carats in the Christiana district, and 106 carats in the Wolmaransstad district.

*Gold.*—The quantity of gold obtained exceeded that of any previous year by 1,086,174 ounces. Table 380 shows that the yearly output is now approaching 5 million ounces, and the value 21 millions sterling. The total value of the gold raised since the resumption of mining operations after the cessation of hostilities, has reached nearly 58 millions sterling. More than 96 per cent. of the output in 1905 was obtained from the mines in the Witwatersrand area.

*Salt.*—The salt is obtained by means of evaporating the brine contained in shallow wells sunk in the Northern Transvaal.

TABLE 379.

STATISTICS showing the work done at GOLD MINES during December, 1905, as compared with August, 1899.

	August, 1899	December, 1905.
No. of mines crushing ... ..	—	87
No. of stamps at work ... ..	6,070	7,294
Tons of ore crushed ... ..	856,233	1,041,092
Yield of gold ... ..	410,965 ozs.	430,986 ozs.
Fine gold per ton crushed ... ..	9.599 dwts.	8.279 dwts.

TABLE 380.

STATISTICS of the GOLD PRODUCTION of the TRANSVAAL since 1895.

Year.	Quantity.		Value.	Year.	Quantity.		Value.
	Fine Ounces.	Kilos.	£		Fine Ounces.	Kilos.	£
1895 ...	2,017,443	62,749	8,569,555	1901 ...	258,032	8,025	1,097,219
1896 ...	2,025,510	63,000	8,603,821	1902 ...	1,718,921	53,464	7,301,501
1897 ...	2,743,518	85,333	11,653,725	1903 ...	2,972,897	92,467	12,628,057
1898 ...	3,823,367	118,920	16,240,630	1904 ...	3,773,517	117,370	16,029,883
1899 ...	3,637,713	113,145	15,452,025	1905 ...	4,909,541	—	20,854,440
1900 ...	348,761	10,848	1,481,442				

\* Acting Governor Taylor. "Straits Settlements Report for 1902." *Colonial Reports*—Annual, No. 406. [Cd. 1763-11.] London, 1903, p. 18.

† Weldon.—*Yearly Report of the Government Mining Engineer for the year ending 30th June, 1905.* Pretoria 1905. *Half-yearly Report of the Government Mining Engineer for the six months ending 31st December, 1905.* Pretoria, 1906.



## TRANSVAAL—continued.

TABLE 381.

AVERAGE NUMBER of PERSONS at WORK at MINES\* and other mineral workings during the years ended 31st December, 1904 and 1905.

Kind of Mines.	Under-ground.			Above-ground.			Total (under and above ground).			Grand Total.
	Whites.	Coloured.	Chinese.	Whites.	Coloured.	Chinese.	Whites.	Coloured.	Chinese.	
Coal ... ..	110	5,366	—	359	3,153	—	469	8,519	—	8,988
Diamond ... ..	61	1,381	—	492	2,501	—	553	3,882	—	4,435
Gold ... ..	7,029	62,479	28,116	9,882	29,968	7,043	16,911	92,447	35,159	144,517
Other mines and works (including alluvial workings).	26	453	—	447	3,911	—	473	4,364	—	4,837
Total for 1905...	7,226	69,679	28,116	11,180	39,533	7,043	18,406	109,212	35,159	162,777
Total for preceding year.	5,927	52,331	3,592	8,456	29,777	1,133	14,383†	82,108†	4,725	101,216

TABLE 382.

OUTPUT and VALUE of MINERALS during the years ended 31st December, 1904 and 1905.

Mineral.	1904.			1905		
	Quantity.		Value.	Quantity.		Value.
	Tons.	Metric Tons.	£	Tons.	Metric Tons.	£
Coal ... ..	2,409,033	2,447,692	883,891	2,606,799	2,648,632	846,272
Diamonds ...	carats 884,330	kilos. 182	1,185,083	carats 802,172	kilos. 165	922,330
Gold (Fine) ...	ozs. 3,773,517	kilos. 117,370	16,028,883	ozs. 4,909,541	kilos. 152,704	20,854,440
Salt‡ ... ..	130	132	781	454	461	2,159
Silver (Fine) ...	ozs. 416,262§	kilos. 12,947	45,319	ozs. 540,145§	kilos. 16,800	63,773
Other Minerals	—	—	319,244	—	—	455,003
Total ..	—	—	18,463,201	—	—	23,143,977

The table below affords further information concerning the output of gold.

TABLE 383.

Source of the gold.	Quantity of fine gold.	Value at £4·24773 per oz.
	Ozs.	£
Stamp mills at the mines ... ..	3,073,463	13,055,248
Chemical processes at the mines ...	1,774,846	7,539,097
Metallurgical and chemical works ...	48,616	206,505
Tailings Syndicates and non-crushing mines.	10,721	45,538
Alluvial workings ... ..	571	2,426
Other sources ... ..	1,324	5,626
Total ... ..	4,909,541	20,854,440

The above figures show the importance of the chemical processes for the extraction of gold, as 36 per cent. of the total quantity was obtained by chemical treatment.

\* Producing and non-producing mines.

† In addition to these persons there were about 903 whites and 2,717 coloured employed in alluvial workings and other mines and works in 1904.

‡ These figures relate to the output of salt for the years ended 30th June, 1904 and 1905 respectively.

§ Estimated quantity of fine silver contained in the gold bullion exported.

|| Including coke, fireclay, granite, limestone, sandstone, slate, bricks, &c.

## TRANSVAAL—continued.

TABLE 384.

FATAL ACCIDENTS at ALL MINES and MINERAL WORKINGS during the year ended 31st December, 1904 and 1905.

Mines and Mineral Workings.	Number of persons killed.										Death-rate per 1000 persons employed.
	Under-ground.			Above-ground.			Total (under and above-ground).			Grand Total.	
	Whites.	Coloured.	Chinese.	Whites.	Coloured.	Chinese.	Whites.	Coloured.	Chinese.		
Coal ... ..	6	24	—	—	1	—	6	25	—	31	3·45
Diamond ... ..	—	—	—	1	4	—	1	4	—	5	1·13
Gold ... ..	66	426	195	10	54	23	76	480	218	774	5·36
Other Mines and Mineral Workings.	—	3	—	2	4	—	2	7	—	9	1·86
Total for 1905 ...	72	453	195	13	63	23	85	516	218	819	5·03
Total for preceding year.	*	*	—	*	*	—	62	355	18	435	4·17

TABLE 385.

FATAL ACCIDENTS at COAL, DIAMOND, and GOLD MINES, CLASSIFIED according to cause, during the year ended 31st December, 1905.

Cause of Accident.	Persons Killed.									
	Coal Mines.		Gold Mines.			Diamond Mines.		Other Mines and Mineral Workings.		
	Whites.	Coloured.	Whites.	Coloured.	Chinese.	Whites.	Coloured.	Whites.	Coloured.	
Explosives ... ..	6	2	31	95	84	—	—	—	1	
Overwinding ... ..	—	—	—	3	—	—	—	—	—	
Travelling in cage or skip	—	—	9	28	9	—	—	—	—	
Struck by cage, skip or hauling rope.	—	—	3	24	8	—	—	—	—	
Travelling by ladders ...	—	—	—	3	2	—	—	—	—	
Falling in shafts, excavations, &c.	—	—	8	39	25	—	—	—	2	
Falling of material ...	—	—	—	51	7	1	1	—	—	
Fall of ground ... ..	—	20	10	119	60	—	1	—	3	
Collapse of shaft... ..	—	—	1	65	—	—	—	—	—	
Trucks and tramways ...	—	1	2	10	9	—	1	—	1	
Boilers and steam pipes ...	—	—	—	—	—	—	—	—	—	
Machinery ... ..	—	—	7	23	5	—	1	2	—	
Directly caused by electricity.	—	—	2	3	3	—	—	—	—	
Miscellaneous ... ..	—	2	3	17	6	—	—	—	—	
Total ... ..	6	25	76	480	218	1	4	2	7	

\* Complete particulars not given.



## TRANSVAAL—continued.

A serious accident occurred on the 11th November, 1905, at the Driefontein Deep Gold Mine by which 1 white fitter and 65 natives lost their lives. It was due to the collapse of a portion of the large pumping station on the east side of the shaft which caused a heavy fall of ground and debris on to the sinkers below. The pumps were broken and the lower portion of the shaft was entirely filled up with rock and water. Full particulars of the accident are given in the Appendix of the Half-yearly Report of the Government Mining Engineer for the six months ending 31st December, 1905.\*

The "Mines Works and Machinery Regulations Amendment Ordinance, 1905," was passed during the year. Amongst other matters it enacts that—

No person under 14 years of age shall be employed underground.

No work shall be performed in or about a mine on Sundays, Christmas Day, or Good Friday, except certain classes of work specially exempted.

An Inspector of Mines is empowered to try any breach of the Mining Regulations unless serious bodily injury or death has been caused, and to inflict a fine not exceeding five pounds. An appeal against the Inspector's decision lies to the Resident Magistrate.

In April of the same year amendments and additions were made in the regulations issued under Section I. of the Mining Certificates Ordinance, 1903.

In 1905 a Commission was appointed to consider the question of the safety of persons travelling in shafts.

*Miners' Phthisis.*—The Government Mining Engineer in his report for the year ending 30th June, 1905,† states that "the recommendations of the Special Phthisis Commission have not resulted in the voluntary use to any extent of dust-laying appliances underground, and that owing to the indifferent manner in which practical dust-laying methods have been received by those persons for whose benefit the whole subject of phthisis prevention was investigated, it has been found necessary to draft certain regulations."

The new Phthisis Regulations,‡ based on the English rules but altered to meet local circumstances, are as follows :—

No person shall use or cause or allow to be used in the mine any percussion machine drill, unless a water jet or spray or other means equally efficient is provided and used so as to prevent the escape of dust thereby caused into the air.

After blasting in any end, rise, or other place, no person shall return to that place until after the lapse of at least half-an-hour, unless the air in such place has been cleared of the dust and smoke arising from such blasting by efficient ventilation or other special means, or unless an effective respirator or other apparatus is used to prevent the inhaling of such dust or smoke.

Blasting shall be so arranged that men working in other places shall be exposed as little as practicable to dust and smoke.

In any place where development work is carried on no person shall remove or allow to be removed the rock broken, if dry and dusty, unless it has been effectively damped so as to prevent the escape of dust into the air during removal.

All plant, material, and other things necessary to enable the above rules to be carried out shall be provided and maintained in working order.

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\* Pretoria, 1906.

† Pretoria, 1905, p. 45.

‡ Issued as Government Notice No. 1100, Mines and Works Regulations—Amendments to Regulation 146, and published in the Transvaal Government Gazette, 22nd December, 1905, p. 1208.



### Trinidad.\*

*Asphalt.*—The deposit of asphalt continues to be worked at La Brea, both from the Pitch Lake and the village areas; the output from the Pitch Lake being roughly 87 per cent. of the total amount obtained. The surface of the lake continues to subside directly with the amount of asphalt extracted. A recent survey of the lake shows the area to be 137 acres. Boreholes are stated to have been put down some years ago in the centre of the lake, to a depth of over 100 feet without striking the bottom of the deposit. The asphalt in the lake consists roughly of 30 per cent. of water, 25 per cent. of fine clay and sand, and 45 per cent. of bitumen. It has been formed by slow exudation from and the breaking up of a tertiary oil sand on the crest of an anticline, where the natural features have retained the residue left after oxidization and evaporation of the more volatile oils.

The village area, which has been the cause of so much litigation in the past, is now worked under legislation recently introduced, the objects of the legislation being to enable the owners of asphalt bearing land to work the asphalt which may be from time to time within their land, without causing undue depletion to neighbouring property. The asphalt bearing land in the La Brea village covers an area of roughly 70 acres, and has been worked up to 30 feet in depth.

The accompanying statistics are tabulated as follows:—*Crude asphalt.*—The asphalt as mined without any refining. *Refined asphalt.*—The product after it has been submitted to boiling in open vats, by which means the water and some of the more volatile oils are removed, producing a reduction in weight of about 33 per cent.; and *Dried asphalt.*—Asphalt which has been boiled down by means of steam under pressure, through coils in the refining vat, causing a reduction in weight of about 25 per cent. There are other deposits of asphalt in the colony, occurring at the outcrop of the oil rocks, but none appear to be concentrated into hollows as at La Brea.

*Coal.*—The exploration of the Cunapo coalfield has been conducted by the Government, and proved to possess Tertiary lignites of excellent quality but very variable in extent and thickness. A few small surface excavations have been made in several localities, but practically no coal has been worked. Coal occurs in the neighbourhood of Sangre Grande, Williamsville, Caparo, Erin, Chatham, Rio Negro, Point-Noir, and Cedros.

*Manjak* (Glance Pitch).—This mineral occurs in lenticular deposits and is at present being worked at a mine in the neighbourhood of San Fernando, where the vein has reached upwards of 30 feet in thickness. The quality of the mineral improves as the depth increases. An explosion of fire-damp at the Vistabella mine in 1904 and a general depression in trade during the year accounts for the "falling off" in the output of this mineral.

*Gold.*—Gold has been found in portions of the northern range, but not in paying quantities. Little or no prospecting work has been done during 1905.

*Graphite.*—Graphite appears to exist in the colony and exploration work is in progress.

*Gypsum.*—There is a deposit of gypsum in the neighbourhood of St. Joseph which has been worked to a small extent.

*Petroleum.*—A geological survey of the oilfields of the Colony is now in progress. The oil-bearing rocks are contained in a series of Tertiary strata (lying unconformably on the Cretaceous), which contain a thickness of some 6,000 feet. Three main horizons of oil-bearing sands have been mapped. The Tertiary rocks have been subjected to earth movements which have produced a series of folds, and in the southern part of the island are in the shape of four huge basins, separated by sharp ridges or anticlines. Along the crest of these anticlines the oil-bearing sands are indicated by pitch cones and volcanoes, masses of pitch, gas blowers, &c. The "pitch lake" is on the crest of one of these ridges. The area under which these Tertiary rocks occur extends over the whole of the southern

\* Information furnished by Mr. J. Cadman, Inspector of Mines for Trinidad.



TRINIDAD—continued.

portion of the island, exceeding 500 square miles. Exploration work is being carried on at Guayaguayare with considerable success.

As the surface indication of oil is so satisfactory, and the area over which this evidence occurs so extensive, there is little doubt that the oil-fields of Trinidad will in the near future be the site of a substantial industry.

Stone.—Limestone continues to be extensively worked for road-metal and lime-burning. Cretaceous grits are also quarried for road material. The principal quarries are Eastern Quarry, Port of Spain, Laventille, Pointe O’Gourde, Carrera, Gasperillo, St. Joseph, Point o’ Pierre, San Fernando and others.

TABLE 386.

NUMBER of PERSONS employed at MINES and OPEN WORKINGS during the years ending December, 1904 and 1905.

Mines or Open Workings.	Underground.		Above Ground.		Total.
	Males.	Females.	Males.	Females.	
Mines (Manjak) ... ..	31	—	14	—	45
Open workings (Asphalt) ... ..	—	—	823	49	872
„ (Limestone, &c.) ... ..	—	—	358	86	444
Total for 1905 ... ..	31	—	1,195	135	1,361
Total for preceding year ... ..	70	—	1,083	118	1,271

TABLE 387.

QUANTITY and VALUE of MINERALS produced during the years ending December, 1904 and 1905.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Asphalt, crude ... ..	118,432	120,333	118,432	78,518	79,778	78,518
„ refined ... ..	10,887	11,062	21,774	14,815*	15,058	29,630
„ dried ... ..	3,722	3,782	4,962	7,245†	7,361	9,660
Manjak... ..	3,023	3,072	4,534	1,077	1,094	1,615
Limestone and road material	36,107	36,686	3,984	37,423	38,024	4,000
Petroleum ... ..	—	—	—	gals. 80	litres. 363	—
Total value ... ..	—	—	153,686	—	—	123,423

\* Equivalent in crude, 29,630 tons.  
† " " 9,660 "

TABLE 388.

NUMBER OF DEATHS FROM ACCIDENTS AT MINES AND OPEN WORKINGS during the years ending December, 1904 and 1905.

Mines or Open Workings.	Underground (Males).	Above ground (Males).	Total.	Death-rate per 1,000 persons employed.
Mines ... ..	1	—	1	22·22
Open workings... ..	—	2	2	1·52
Total for 1905 ... ..	1	2	3	2·20
Total for preceding year ...	17	1	18	14·16

The very high death-rate at mines in Table 388 is accounted for by the fact that only a few persons are employed.  
The figures in the foregoing tables are approximate, as the Mines, Borings, and Quarries Ordinance which provides for the collecting of statistics is not yet law.

Turks and Caicos Islands.\*

The production of salt in these islands gives employment to about 1,200 persons annually. It is obtained by the solar evaporation of sea water in shallow ponds on the coast. Exceptionally heavy rainy seasons were experienced in the islands in 1904 and 1905 which proved disastrous to the industry, and accounts for the decrease in the output. Most of the salt is exported to the United States and Canada.

TABLE 389.

QUANTITY and VALUE of SALT exported during the years 1904 and 1905.

Mineral.	1904.			1905.		
	Quantity.		Value.	Quantity.		Value.
	Statute Tons.	Metric Tons.	£	Statute Tons.	Metric Tons.	£
Salt ... ..	30,462	30,951	15,079	29,130	29,597	14,604

Uganda Protectorate.†

What little is known about the mineral resources of Uganda may be summed up as follows :—Fragments of coal are found in the bed of the streams all round Mount Elgon ; there are traces of copper in Busoga ; iron ore is abundant in the Protectorate ; alluvial gold is known to exist in parts lying far from the railway, and there are deposits of salt at Toro and at Kibero. The revenue from the salt deposits for the year ending March, 1904, amounted to £180.

\* Governor Sir J. A. Swettenham, "Turks and Caicos Islands Report for 1904."—*Colonial Reports—Annual*, No. 454 [Cd. 2684], London, 1905, *Blue Book for Turks and Caicos Islands for 1905*, and information furnished from the Commissioner's office in the Island.  
† Sir H. H. Johnston, *Report on the Uganda Protectorate, Africa*, No. 7 (1901) [Cd. 671], London, 1901, p. 12, and Sadler, *Uganda, Report for 1904-5.*" *Colonial Reports—Annual*. No. 467 [Cd. 2684-13], London, 1905, p. 13.



**Virgin Islands\*.**

Mines containing molybdenum and copper exist in Virgin Gorda, one of the group of these Islands.

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**Wei-hai-wei.†**

Fourteen prospecting licences were issued in 1905. The Wei-hai-wei Gold Mining Company has during the year been operating a 20-stamp mill at the Kin Tsu Ling Mine. Concentrates are shipped to San Francisco for treatment. The Company employs 9 white men and 400 Chinese.

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**West Indies. (See BARBADOS, DOMINICA, REDONDA, and TRINIDAD.)**

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\* Acting Governor Bell, "Leeward Islands, Report for 1904-5." *Colonial Reports—Annual*. No. 478 [Cd. 2684-24.] 1905, p. 23.

† Lockhart.—"Wei-hai-wei, Report for 1905." *Colonial Reports—Annual*. No. 487 [Cd. 2684-33], London, 1906, pp. 5 and 6.

## FOREIGN COUNTRIES.

### Abyssinia.\*

Although several minerals are known to exist in Abyssinia, Vice-Consul Johnstone states in his report for 1905-6 that the impossible terms of the concessions granted at present for their exploitation prevent any of them from being seriously considered when brought to Europe.

*Coal.*—Workable lignite is said to occur at Tégullet, Debra-Libanos, and Ankober.

*Gold.*—The precious metal is obtained from the Wallega, Shankalla, and Benischongul districts and exported from Addis Abbaba and Harrar. The quantity exported from Harrar in 1905-6 is estimated at 4,000 ozs. and valued at £15,600.

*Iron Ore.*—The districts of Entoto Hamasen, Damot, Harrar, and Agomededer abound in iron ore, which is smelted locally.

*Salt.*—Mines at Arho in the Tittal country between Makallé and the Red Sea produce a large quantity of salt; the mineral is likewise obtained from Gojam. The estimated value of the salt produced in the whole of the Addis Abbaba district during the year 1899-1900 amounted to £18,700.

In addition to the above minerals silver, collar, and sulphur have been found.

### Algeria.†

The three principal minerals raised in Algeria are iron ore, phosphate of lime and zinc ore. A considerable quantity of limestone is quarried, and the workings for salt are of some importance.

*Antimony Ore.*—The mines of Djebel-Taya, near Guelma, were not worked in 1905.

*Copper Ore.*—The output of this mineral in the Department of Constantine during 1905 was nearly 1,800 tons.

*Iron Ore.*—Most of the iron ore, which is magnetite and manganiferous hæmatite, is produced by the Mokta-el-Hadid Mines near Bona and the Benisaf Mines near Tlemsen. The former produced 8,000 tons and the latter 337,000 tons in 1905.

*Lead Ore.*—The Ain-Smara mines, situated 11 miles from Constantine, contain very rich lodes of lead ore.

*Manganese Ore.*—A very rich deposit of this mineral exists near Ain-Yagout, the ore containing 65 per cent. of metal.

*Marble.*—Numidian marble had won renown in the time of the Romans. The onyx marble produced by the Colony is of great beauty. One of the localities where it is found is Sidi-Hamza. Quarries at Filfila near Philippeville and at Ouled-Rahmoun in the district of Bona produce statuary marble as well as many coloured varieties. Other quarries are situated at Tekbalet and Oued Chouly in the Department of Oran.

*Petroleum.*—A company is actively engaged in preparing the ground to instal a new industry of petroleum at Bône.

*Phosphate of Lime.*—The annual output has grown from about 5,000 tons in 1893, to 334,784 tons in 1905. The phosphate is quarried in the vicinity of Tébessa and also at Tocqueville and Bordj R'Dir in the Province of Constantine, and it is now the most important mineral product of Algeria.

*Salt.*—Nearly all the salt was produced from lakes in the Departments of Constantine and Oran.

*Zinc Ore.*—Calamine and blende are both worked and especially in the Department of Constantine. The districts of Souk-Ahras and Tébessa abound in deposits of zinc ore, but are unworked.

TABLE 390.

PERSONS EMPLOYED at Mines and Quarries during the Years 1904 and 1905.

Year.	At Mines.	At Underground Quarries.	At Open Quarries.	Total.
1904	3,572	1,049	5,240	9,861
1905	5,284	1,397	6,714	13,395

\* Baird, "Report on the Trade of Addis Abbaba, and Harrar, Abyssinia." *Dipl. and Cons. Reports* No. 2531, Ann. Ser., 1899-1900 [Cd. 352-27], 1900, with map: Vice-Consul Johnstone "Trade of Abyssinia for the year 1905-6." *Dipl. and Cons. Reports* No. 3747, Ann. Ser., 1907 [Cd. 3283-8], and information furnished by the Consul-General at Addis Abbaba.

† *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1904, and pour l'année 1905*; and Dundas, "Trade and Agriculture of Algeria for the year 1905." *Dipl. and Cons. Reports*, No. 3712, Ann. Ser. [Cd. 2682-223]. London, 1906.



ALGERIA—continued.

TABLE 391.

QUANTITY and VALUE of the MINERALS produced from Mines during the Years 1904 and 1905.\*

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony ore ... ..	160	21,120	—	—
Brown coal ... ..	105	1,260	85	1,020
Copper ore ... ..	1,804	112,570	1,784	257,390
Iron ore ... ..	468,737	4,177,698	568,609	5,588,939
Lead ore, argentiferous ... ..	511	37,980	7,470	866,995
Mercury... ..	3,148	28,332	1,900	28,500
Rock salt and salt from brine ... ..	18,563	364,257	26,086	571,551
Zinc ore... ..	47,192	3,932,248	67,922	7,089,914
Total Value in Francs ... ..	—	8,675,465	—	14,404,309
„ „ £ sterling ... ..	—	£347,019	—	£576,172

TABLE 392.

QUANTITY and VALUE of MINERALS produced from Quarries during the Years 1904 and 1905.\*

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Clay ... ..	125,410	443,312	133,600	181,400
Flags ... ..	8,000	80,000	10,000	100,000
Gypsum ... ..	350	875	—	—
Limestone ... ..	35,800	802,200	45,020	971,870
Marble ... ..	530	100,500	451	77,200
Onyx... ..	121	36,000	270	80,000
Phosphate of lime ... ..	343,317	6,866,340	334,784	6,347,840
Plaster and cement ... ..	38,420	785,050	40,618	736,848
Sand and gravel ... ..	51,020	53,320	61,900	69,850
Stone for building ... ..	724,300	1,684,100	625,105	1,527,940
„ (rough and broken) ... ..	1,096,800	1,070,550	1,121,500	1,088,500
Total Value in Francs ... ..	—	11,922,247	—	11,181,448
„ „ £ sterling ... ..	—	£476,890	—	£447,258

\* Statistique de l'Industrie Mini re en France et en Alg rie pour l'ann e 1904, and pour l'ann e 1905.

ALGERIA—continued.

TABLE 393.

DEATHS from ACCIDENTS during the Years 1904 and 1905.\*

Kind of Working.	1904.		1905.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines... ..	4	1.12	6	1.14
Underground Quarries ... ..	1	.95	1	.72
Open Quarries ... ..	7	1.34	4	.60
Total ... ..	12	1.22	11	.82

Annam. (See INDO-CHINA.)

Arabia.

The Arab is not a miner by nature, and there is little or no working for minerals on the great Arabian peninsula. In days gone by, according to Burton, gold mines were worked in the land of Midian.

Argentine Republic.†

As the mineral resources of the Argentine Republic are chiefly in the Andes at a great elevation where fuel and water are scarce, and transport is difficult and costly, and very high fees have to be paid for licences to prospect and work in new districts, little has been done to develop them. In addition to the ores of copper, gold, iron and lead which exist in the provinces of Rioja and Catamarca, mercury, nickel, and silver, asbestos, borax, coal, nitrate of soda, petroleum, salt, and sulphur are to be found in various parts of the Republic.

Some important development work in gold mining is reported to be taking place in the northern part of the Republic on the Bolivian frontier. A number of companies have been formed with the object of dredging for gold.

It is reported that petroleum has been found in the south of the Republic, and that a factory has been erected at Campana for refining the oil.

\* *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1904, and pour l'année 1905.*

† "Mineral Resources of the Argentine Republic," by James McKean Rowbotham, A.M.I.C.E. *Pro. Inst. C. E.*, Vol. CXXVIII., 1896-7, Part II.; "Official Report upon the Mines, Mining, Metallurgy and Mining Laws of the Argentine Republic," by H. D. Hoskold, published by the Ministry of Agriculture, Commerce and Industries, Buenos Ayres; Republic Argentina, *Anales del Ministerio de Agricultura, Sección Geología, Mineralogía y Minería*, Tomo I., Núm. 1; Harford "Finances of the Argentine Republic for the year 1904 and part of 1905." *Dipl. and Cons. Reports*, No. 3434, Ann. Series [Cd. 2286-178], London, 1906, p. 12; and Consul Rees, "Trade of Consular District of Buenos Ayres for the year 1905." *Dipl. and Cons. Reports*, No. 3557, Ann. Series [Cd. 2682-82], 1906.



ARGENTINE REPUBLIC—*continued.*

Large quantities of salt are obtained from the brine of a huge salt lake near San Blas, some 800 miles south of Buenos Ayres. The output at the present time is about 25,000 tons a year.\*

Unfortunately the National Department of Mines and Geology at Buenos Ayres is unable to supply any statistics. The figures in the following table (No. 394) have, therefore, no official sanction.

TABLE 394.

QUANTITY and VALUE of METALS produced during the Years 1904 and 1905.

Metal.	1904.		1905	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Copper (fine) ...	157†	9,103‡	157†	10,765‡
Gold ... ..	Kilos. 14§	1,889		—
Silver ... ..	Kilos. 2,058§	7,885		—

Aruba. (See DUTCH WEST INDIES.)

## Austria-Hungary.¶

As the Governments of Austria and Hungary publish separate official statistics, it has been thought advisable to maintain the distinction in the tables which follow. Further, it is convenient to refer to Bosnia and Herzegovina in this place, as these countries are administered by the common Ministry of Finance of Austria-Hungary, though not incorporated with the Empire.

*Brown Coal.*\*\*—Most of the provinces of Austria proper yield brown coal, but Bohemia is by far the largest producer, with an output in 1905 of 18,683,817 tons. The principal workings for brown coal are in the Taplitz basin, where the seams often reach a thickness of 98½ feet (30 m.). These are of Lower Miocene age, and there are likewise seams of 3 feet thick of Upper Oligocene age which are worth working.

Styria, next in importance after Bohemia, produced nearly 2¾ million tons of brown coal in 1905. The deposits are of Miocene age. Seams 50 feet to 100 feet in thickness (16 m. to 30 m.) are not uncommon, and in one place a seam is nearly 200 feet (60 m.) thick.

The principal brown coal mines in Hungary are situated in the counties of Nógrád, Borsod, and Hunyad, though there is a considerable output from the counties of Esztergom, Komárom and Sopron.

*Coal.*\*\*—Austria proper has two great sources of coal supply: (a) Part of the great Moravian-Silesian-Polish basin, which it shares with Prussia and Russia; (b) North-Eastern Bohemia.

\* Consul Ross, "Trade of Consular District of Buenos Ayres for the years 1901 and 1902." *Dipl. and Cons. Reports*, No. 2,767, Ann. Series [Cd. 786-71], p. 8, and No. 2961 [Cd. 1386-38].

† Return compiled by Henry R. Merton and Co., Ltd., London.

‡ Value of foreign copper in London market.

§ Taken from the Report of the Director of the United States Mint for the fiscal year ending 30th June, 1905.

|| Not obtainable.

¶ *Statistisches Jahrbuch des K. K. Ackerbau-Ministeriums für 1905*, Vienna, Part II., No. 1; *Magyar Statisztikai Évkönyv*, New Series, XIII. for 1905, Budapest, 1906; and information furnished by the Central Statistical Office of the Kingdom of Hungary.

\*\* *Die Mineralkohlen Oesterreichs*, Vienna, 1903.



AUSTRIA-HUNGARY—*continued.*

(a.) The provinces of Moravia, Silesia, and Galicia furnished nearly 64 per cent. of all the coal of Austria proper in 1905; the coal mining industry is most largely developed in the Ostrau-Karwin district of Silesia, where there are 25 workable coal seams making up a total thickness of 72 feet (22 m.) of coal. Some of it is made into excellent coke.

(b.) In 1905 Bohemia supplied nearly 36 per cent. of all the coal of Austria proper. The main seam of the Kladno-Rakonitz basin is 20 feet to 36 feet thick.

Though the deposits are of comparatively little importance commercially, it is interesting from a geological point of view to note the fact that true coal is being worked in Austria in several of the subdivisions of the secondary rocks. Thus in Lower Austria coal is obtained from seams of Triassic, Liassic, and Upper Cretaceous age, and a coal of Cretaceous age is being mined in North-Western Moravia.

The principal coal regions of Hungary are in the counties Krassó-Szörény and Baranya.

*Gold.*—The bulk of the gold comes from mines in Hungary, and especially from the mineral region of Zalatna and from the neighbourhood of Nagybánya in the county of Szatmár. Most of the gold ore raised in Austria in 1905 was obtained from Mount Roudny mine near Beneshaw, in Bohemia.

*Iron Ore.*—Austria on the contrary is the chief producer of iron. Among the Austrian provinces, Styria retains the first place with about 51 per cent. of the output, next comes Bohemia with 42 per cent. As regards Hungary the ores of this metal are worked in very many parts of the Kingdom, especially in the districts of Igló, Zalatna, and Oraviczabánya.

*Lead Ore.*—About 65 per cent. of the Austrian lead ore raised in 1905 came from Carinthia, and 29 per cent. from Galicia.

*Mercury.*—The famous quicksilver mine at Idria in Carniola has now been worked for upwards of five centuries; since 1580 it has belonged to the State. A little mercury is obtained from Hungary, and the metal has also been discovered in Dalmatia.\*

*Opal.*—The celebrated opal mines of Hungary are situated at Dubnik in the county of Sáros; they are worked by the State. The annual output is from 10,000 to 12,000 carats.

*Ozokerite and Petroleum.*—Galicia is remarkable for two important products, mineral wax and mineral oil. The principal workings for the former are at Boryslaw in the Drohobycz district, which likewise has the most productive oil-wells.

*Salt.*—Both in Austria and in Hungary the salt trade is a Government monopoly. Rock salt is obtained at Wieliczka and Bochnia in Galicia, and especially in the counties of Máramaros, Alsó-Fehér and Szolnok-Doboka in Hungary and in Transylvania; saliferous marl is treated by the lixiviation process in the Austrian Alps. On the shores of the Adriatic salt is extracted by solar evaporation from sea water. The salines of Istria and Dalmatia which have hitherto been in private hands are now the property of the Government.†

*Silver.*—Bohemia and Hungary both produce silver. The Przibram mines in the former country have long been celebrated, not only as large producers of silver and lead, but also on account of their great depth.

\* Churchill, "Report on the Trade and Commerce of Trieste for the year 1901." *Dipl. and Cons. Reports*, No. 2762, Ann. Ser., London, 1902, p. 12.

† Spence "Trade of Trieste for the year 1905." *Dipl. and Cons. Reports*, No. 3550, Ann. Ser., London, 1906, p. 6.



## AUSTRIA.

TABLE 395.

PERSONS EMPLOYED at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, arranged according to PROVINCE in which Employed, during the Years 1904\* and 1905.†

Province.	Persons Employed.			
	1904.		1905.	
	Total.	Percentage of the Total Number.	Total.	Percentage of the Total Number.
Austria, Lower ... ..	601	0.44	621	0.46
„ Upper ... ..	1,587	1.17	1,547	1.13
Bohemia ... ..	62,416	46.04	62,535	45.88
Bukowina ... ..	227	0.17	210	0.15
Carinthia ... ..	3,751	2.77	2,362	1.73
Carniola ... ..	2,284	1.68	3,840	2.82
Dalmatia ... ..	739	0.54	737	0.54
Galicia ... ..	5,362	3.96	5,546	4.07
Görnz and Gradisca ... ..	21	0.02	19	0.01
Istria ... ..	984	0.73	962	0.71
Moravia ... ..	11,769	8.68	11,901	8.73
Salzburg ... ..	505	0.37	507	0.37
Silesia... ..	29,019	21.41	28,361	20.81
Styria ... ..	15,262	11.26	16,133	11.83
Tyrol ... ..	1,037	0.76	1,035	0.76
Total ... ..	135,564	100.00	136,316	100.00

TABLE 396.

PERSONS EMPLOYED at MINES, exclusive of SALT and OZOKERITE MINES and PETROLEUM WELLS, during the Years 1904 and 1905.‡

Year.	Coal.						Brown Coal.						Iron Ore.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	Total.
1901 ..	146	50,893	2,618	3,996	—	66,507	236	49,268	2,397	1,066	1	52,732	35	3,980	85	184	—	4,249
1905 ..	136	59,563	2,502	4,007	—	66,072	217	49,768	2,327	1,094	—	53,189	33	4,603	96	97	—	4,796

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1904, Vienna, Part II., No. 2, p. 143.

† Do. do. do. 1905, do. p. 143.

‡ Do. do. do. do. do. pp. 144-147.

AUSTRIA—continued.

TABLE 396—continued.

Year.	Other Mines.						All the Mines.					
	No. of Mines.	Persons Employed.					No. of Mines.	Persons Employed.				
		Men.	Women.	Young Persons.	Children.	Total.		Men.	Women.	Young Persons.	Children.	General Total.
1904 ... ..	89	10,587	794	897	8	12,076	496	123,728	5,894	5,933	9	135,564
1905 ... ..	95	10,850	770	631	8	12,259	481	124,784	5,695	5,829	8	136,316

TABLE 397.

PERSONS EMPLOYED at SALT MINES and WORKS during the Years 1904 and 1905.\*

Country or Province.	Salt Mines.				Brine Evaporating Works and Sea Salt Works.					Total at Salt Mines and Works.				
	Men.	Women.	Young Persons.	Total.	Men.	Women.	Young Persons.	Children.	Total.	Men.	Women.	Young Persons.	Children.	Total.
Upper Austria.	435	—	—	435	899	12	2	—	913	1,324	12	2	—	1,338
Salzburg ..	190	1	—	191	171	2	—	—	173	361	3	—	—	364
Bukowina	39	—	—	39	52	—	—	—	52	91	—	—	—	91
Styria ..	164	—	—	164	346	6	—	—	352	510	6	—	—	516
Tyrol ..	122	—	—	122	124	—	—	—	124	246	—	—	—	246
Dalmatia..	—	—	—	—	491	301	84	—	876	491	301	84	—	876
Istria ..	—	—	—	—	561	451	8	—	1,020	561	451	8	—	1,020
Galicia ..	2,031	—	—	2,031	728	—	—	—	728	2,759	—	—	—	2,759
Totals for 1905.	3,971	1	—	2,972	3,372	772	94	—	4,238	6,343	773	94	—	7,210
Totals for 1904.	2,880	—	2	2,882	2,389	886	123	—	4,378	6,249	866	126	—	7,240

TABLE 398.

PERSONS EMPLOYED at OZOKERITE MINES and PETROLEUM WELLS during the Years 1904 and 1905.†

Province.	Kind of Workings.	1904.				1905.			
		Persons Employed.				Persons Employed.			
		Men.	Women.	Young Persons.	Total.	Men.	Women.	Young Persons.	Total.
Galicia ...	Ozokerite ...	2,929	45	20	2,994	2,817	31	40	2,888
„ ...	Petroleum ...	6,228	27	16	6,271	6,617	16	17	6,650

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1905, Vienna, Part II., No. 2, p. 156.  
† Do. do. do. do. do. No. 2, pp. 345 and 346.



## AUSTRIA—continued.

TABLE 399.

QUANTITY and VALUE of MINERALS produced from MINES, exclusive of SALT, OZOKERITE, and PETROLEUM, during the Years 1904 and 1905.\*

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum shale and vitriol ore ...	2,337	18,698	1,657	13,256
Antimony ore ...	103	8,666	1,673	111,046
Arsenic ore ...	—	—	3	32
Asphalt ...	1,434	69,466	4,363	65,565
Bismuth ore ...	2	3,456	—	27
Brown coal ...	21,987,651	96,796,467	22,692,076	100,956,961
Coal ...	11,868,245	95,485,941	12,585,263	99,874,726
Copper ore ...	10,701†	628,729†	10,677	564,931
Gold ore‡ ...	12,653	293,622	35,937	757,523
Graphite ...	28,620	1,901,883	34,416	1,350,514
Iron ore ...	1,719,219	15,095,192	1,913,782	16,814,437
Lead ore ...	22,513	3,085,285	23,338	4,215,614
Manganese ore ...	10,189	173,186	13,788	220,461
Quicksilver ore ...	88,278	2,235,392	86,856	2,240,114
Silver ore§ ...	21,948	3,021,046	21,047	3,010,375
Sulphur ore ...	11,788†	210,913†	8,407	159,072
Tin ore ...	76	9,983	52	13,156
Tungsten ore ...	52	77,915	59	100,580
Uranium ore ...	17	204,842	16	267,255
Zinc ore ...	29,226	2,112,745	29,983	2,409,886
Total value in crowns ...	—	221,433,427	—	233,145,531
" " £ sterling ...	—	£9,218,711	—	£9,706,309

TABLE 400.

QUANTITY and VALUE of SALT produced during the Years 1904 and 1905.||

Province.	Rock Salt.	Salt from Brine.	Sea Salt.	Industrial Salt.	Value reckoned according to the Monopoly Prices.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Crowns.
Upper Austria ...	251	68,723	—	7,353	13,890,622
Salzburg ...	10	14,933	—	8,298	2,964,872
Bukovina ...	1,170	4,353	—	400	1,004,384
Styria... ..	3,067	18,735	—	5,583	4,032,534
Tyrol... ..	19	12,526	—	3,783	2,320,642
Dalmatia ...	—	—	2,961	—	297,920
Istria ...	—	—	14,718	—	1,899,704
Galicia ...	32,276	48,729	—	95,488	19,168,305
Total for 1905 ...	36,793	167,999	17,679	120,905	45,579,033
" 1904 ...	38,544	173,941	51,118	106,272	£1,897,545
					52,110,160
					£2,169,449

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1905, Vienna, Part II., No. 1.

† Corrected figures.

‡ 71 kilos of fine gold were obtained at the Metallurgical Works in 1904, and 204 kilos. in 1905.

§ 39,032 kilos. of fine silver were obtained at the Metallurgical Works in 1904, and 38,453 kilos. in 1905.

|| Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1905, Vienna, Part II., No. 1, pp. 204 and 205.

AUSTRIA—continued.

TABLE 401.

(QUANTITY and VALUE of OZOKERITE and PETROLEUM produced during the Years 1904 and 1905.\*

Provinces.	Mineral.	1904.		1905.	
		Quantity.	Value.	Quantity.	Value.
Galicia ...	Ozokerite ... ..	Metric Tons. 3,086	Crowns. 4,730,554	Metric Tons. 2,957	Crowns. 4,131,566
" ...	Petroleum ... ..	823,943	24,405,822	794,391	19,587,433
	Total value in crowns	—	29,136,376	—	23,718,999
	" £ sterling	—	£1,213,005	—	£987,469

TABLE 402.

ACCIDENTS at MINES, exclusive of OZOKERITE MINES and PETROLEUM WELLS, during the Years 1904 and 1905.†

Kind of Mines.	1905.			
	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.	Tons of Mineral raised per Death from Accident.
Coal (bituminous) ... ..	96	551	1·45	131,096
Brown coal ... ..	87	820	1·64	260,828
Iron ore ... ..	6	41	1·25	318,964
Salt ... ..	—	19	—	—
Other mines (excluding ozokerite mines, and petroleum wells).	11	82	0·90	24,752
Total for 1905 ... ..	200	1,513	1·39	188,945
" preceding year ... ..	122	1,499	0·85	296,179

TABLE 403.

ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS during the Years 1904 and 1905.‡

Kind of Workings.	1904.			1905.		
	Deaths.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.	Death.	Persons seriously injured.	Death-rate per 1,000 Persons Employed.
Ozokerite ... ..	2	14	0·67	3	7	1·04
Petroleum ... ..	4	74	0·64	6	106	0·90

The accidents have been classified according to mineral worked, place, and cause.

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1905, Vienna, Part II., No. 2, pp. 345 and 346.  
† Do. do. do. do. do. pp. 250, 251, 261 and 269.  
‡ Do. do. do. do. do. pp. 360 and 363.



AUSTRIA—continued.

TABLE 404.

DEATHS classified according to the MINERAL worked, and the PLACE of the ACCIDENT, during the Years 1904 and 1905.\*

Place of Accident.	Coal.	Brown Coal.	Iron Ore.	Rock Salt.	Other Minerals.	Total.
In perpendicular shafts ...	11	13	1	—	3	28
On inclined planes ... ..	4	3	—	—	—	7
In levels ... ..	30	32	—	—	3	65
At the working face ... ..	37	26	1	—	4	68
Above ground ... ..	14	13	4	—	1	32
Total for 1905 ... ..	96	87	6	—	11	200
„ preceding year ...	61	49	6	—	6	122

TABLE 405.

PERCENTAGES of DEATHS, arranged according to MINERAL worked and PLACE where the ACCIDENT happened, during the Years 1904 and 1905.†

Kind of Mines.	Percentage of Deaths.					
	Perpendicular Shafts.	Inclined Planes.	Levels.	At the Working Face.	Above-ground.	Total.
Coal ... ..	5·50	2·00	15·00	18·50	7·00	48·00
Brown coal ...	6·50	1·50	16·00	13·00	6·50	43·50
Iron ... ..	0·50	—	—	0·50	2·00	3·00
Rock salt ...	—	—	—	—	—	—
Other mines ...	1·50	—	1·50	2·00	0·50	5·50
Total for 1905 ...	14·00	3·50	32·50	34·00	16·00	100·00
„ preceding year	9·02	9·02	22·13	44·26	15·57	100·00

\* Statistisches Jahrbuch des k. k. Ackerbau Ministeriums for 1905, Vienna, Part II., No. 2, pp. 255-261.  
† Do. do. do. do. do. p. 251..

AUSTRIA—continued.

TABLE 406.

DEATHS classified according to CAUSE of ACCIDENT in MINES (exclusive of WORKINGS for OZOKERITE and PETROLEUM) during the Years 1904 and 1905.\*

Cause of Accident.	Number of Persons killed.		Increase or Decrease.
	1904.	1905.	
By falls of roof ... ..	40	65	+ 25
„ haulage or winding appliances ... ..	22	23	+ 1
„ stones or things falling down ... ..	23	18	— 5
„ machines or tools ... ..	3	4	+ 1
„ falling down ... ..	8	14	+ 6
„ firedamp explosions ... ..	3	—	— 3
„ ignitions of inflammable gas ... ..	—	6	+ 6
„ suffocation ... ..	2	36	+ 34
„ coal, stone, &c., falling or sliding down above ground.	3	3	=
„ travelling in cage or climbing ladders ... ..	1	3	+ 2
„ blasting ... ..	3	5	+ 2
While undercutting (holing) .. ..	5	5	=
„ timbering or walling ... ..	2	4	+ 2
By irruption of water ... ..	—	—	=
„ electric current ... ..	1	—	— 1
„ burning or scalding ... ..	—	1	+ 1
„ other causes ... ..	6	13	+ 7
Total ... ..	122	200	+ 78

The preceding tables show that in the mines of Austria proper (exclusive of workings for ozokerite and petroleum) there were 200 deaths from accidents, or 78 more than in 1904. The accidents at the ozokerite and petroleum workings are given in the following table :—

TABLE 407.

NUMBER of DEATHS and of PERSONS seriously injured by ACCIDENTS at OZOKERITE MINES and PETROLEUM WELLS, classified according to the PLACE where the ACCIDENT happened, during the Year 1905, and total for the preceding year.†

Place of Accident.	Number of Deaths from Accidents.	Number of Persons seriously injured.
In vertical shafts ... ..	2	—
In sinks and rises ... ..	—	—
In levels ... ..	1	3
At the working face ... ..	—	—
On surface ... ..	6	110
Total for 1905 ... ..	9	113
„ preceding year	6	88

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums for 1905, Vienna, Part II., No. 2, p. 252.  
† Do. do. do. do. do. pp. 359-363.



## AUSTRIA—continued.

Table 406 shows an increase of 25 in the number of deaths from falls of roof during the year.

In the year 1905 there were 3 explosions of firedamp in mines in Austria, causing serious injuries to 2 persons. Of these 3 explosions, which were caused by naked lights, 1 happened in a coal mine, and 2 in brown coal mines.

During the year an underground fire occurred at Helen Mine in Neusattl (Bohemia) and 19 persons lost their lives through inhaling noxious gases.\*

According to the Report of the Austrian Firedamp Commission† there were 692 breathing appliances in use at the Ostrau-Karwin Collieries in 1903. Of these 481 were pneumataphors, 125 of the Neupert type and 79 of the Shamrock type. The Rescue Corps consists of 1,424 men.

## BOHEMIA.

As Bohemia employs such a large proportion of the miners in Austria, details concerning this province have been extracted from the official reports.

TABLE 409.

PERSONS EMPLOYED at the various classes of MINES in BOHEMIA during the Years 1904 and 1905.‡

Kind of Mines.	Men.	Women.	Young Persons.	Children.	Total.	Percentage of Total Number of Persons Employed.
Coal ... ..	19,584	766	1,372	—	21,722	34.74
Brown coal ... ..	31,957	1,155	509	—	33,621	53.76
Iron ore ... ..	1,612	—	21	—	1,633	2.61
Other minerals ... ..	5,225	114	218	2	5,559	8.89
Total for 1905 ... ..	58,378	2,035	2,120	2	62,535	100.00
„ preceding year	58,169	2,164	2,080	3	62,416	100.00

TABLE 410.

DEATHS at MINES during the Years 1904 and 1905.§

Kind of Mines.	Number of Deaths from Accidents.	Average Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral produced per Death by Accident.
Coal ... ..	39	1.80	115,501
Brown coal ... ..	71	2.11	263,152
Iron ore ... ..	2	1.22	404,102
Other minerals ... ..	7	1.26	12,231
Total for 1905 ... ..	119	1.90	202,371
„ preceding year	67	1.07	346,054

\* Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1905, Vienna, Part II., No. 2, p. 239.

† Mitteilungen des ständigen Komitees zur Untersuchung von Schlagwetterfragen in Wien, Vienna, 1906, p. 137.

‡ Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1905, Vienna, Part II., No. 2, p. 122.

§ Statistisches Jahrbuch des k. k. Ackerbau-Ministeriums für 1905, Vienna, Part II., No. 2, pp. 237 and 238. Also included with Austria in table on page 370.

HUNGARY.

TABLE 411.

PERSONS EMPLOYED at all MINES (including SALT MINES) and SMELTING WORKS during the Years 1904\* and 1905.†

	Year.	Men.	Women.	Children.	Total.
	1904 ... ..	65,709	1,638	5,955	73,302
	1905 ... ..	66,787	1,713	5,306	73,806

TABLE 412.

QUANTITY and VALUE of MINERALS and METALS produced in 1904\* and 1905.†

Mineral, Metal, or Product.	1904.		1905.	
	Quantity.	Value, Unit = 1,000 Czs.	Quantity.	Value, Unit = 1,000 Czs.
	Metric Tons.		Metric Tons.	
Antimony ore ... ..	1,080	74·4	949	143
Antimony, crude, and regulus ...	1,007	507·4	756	511
Asphalt .. ...	2,221	228·0	173	19
Auriferous and argentiferous lead and copper ore.	111,268	1,688·0	93,898	2,324
Auriferous silver ore ... ..	1,239	306·1	836	359
Bismuth ore ... ..	15	12·6	32	18
Briquettes ... ..	103,481	1,468·0	144,697	2,165
Brown coal ... ..	5,519,349	37,822·7	6,088,578	39,121
Coal ... ..	1,155,320	11,888·3	1,088,087	11,345
Copper ore ... ..	747	94·0	1,379	116
Gold ore (washed) .. ...	5,622‡	912·8	6,457§	1,002
Iron ore ... ..	1,524,036	7,913·6	1,661,358	8,259
Iron pyrites ... ..	97,148	817·8	106,848	885
Iron vitriol ... ..	1,277	23·8	920	15
Lead ore... ..	3,922	619·5	686	102
Manganese ore ... ..	11,527	123·9	9,943	97
Petroleum ... ..	2,134	111·2	471	27
Salt ... ..	226,876	32,508·0	232,274	32,531
Silver ore ... ..	445	31·8	97	7
Sulphur .. ...	143	21·7	135	20
Total value in Crowns ... ..	—	97,173·6	—	99,066
„ „ £ sterling ... ..	—	£4,048,900	—	£4,127,750

\* Official Return furnished by the Central Statistical Office, Budapest, and taken from the *Magyar Statisztikai Évkönyv*, New Series xii., 1904, Budapest.  
† Official Return furnished by the Central Statistical Office, Budapest, and taken from the *Magyar Statisztikai Évkönyv*, New Series xiii., 1905.  
‡ 3,669 kilos. of fine gold and 16,352 kilos. of fine silver were obtained at the Metallurgical Works in 1904  
§ 3,665 kilos. of fine gold and 15,946 kilos. of fine silver were obtained at the Metallurgical Works in 1905.  
|| These figures represent the quantity sold during the year by the royal monopole, and include salt imported for consumption The production in 1904 was 187,620 metric tons, and in 1905, 195,410 metric tons.



HUNGARY—continued.

TABLE 413.

DEATHS at all MINES (including SALT MINES and SMELTING WORKS) during the Years 1904\* and 1905.†

Year.	Number of Deaths from Accidents.	Number of Persons severely injured.	Death-rate from Accidents per 1,000 Persons Employed.
1904 ... ..	112	312	1.53
1905 ... ..	126	376	1.71
Comparison between 1904 and 1905	+14	+64	+0.18

BOSNIA AND HERZEGOVINA.‡

Brown coal, copper ore, iron ore, manganese ore, and salt are the chief mineral products. Other minerals known to exist are the ores of antimony, arsenic, chromium (which is being worked), gold, lead, quicksilver, and zinc ; besides asbestos, asphalt, magnesite, and petroleum.

*Brown Coal.*—The principal collieries are at Zenica, Kreka, and Kakanj-Doboj ; they are worked by the State. The most important seams at the two first named collieries are respectively 33 feet (10 metres) and 52½ feet (16 metres) thick. The coal is of Tertiary age. Coal-mining is a recent industry, for it only started in 1880, in which year 500 tons were raised ; in 1905 the total output had risen to 540,236 tons, of which Zenica colliery produced 166,640 tons, Kreka colliery 266,585 tons, and Kakanj-Doboj colliery 80,373 tons. Some is exported to towns on the Adriatic.

*Chromic Iron and Manganese Ore.*—A large Viennese company has manganese mines at Cavljano vic and chromium mines at Dubostica.

*Copper Ore.*—The ores of this metal are mined and smelted at Maskara.

*Iron Ore.*—The ironworks at Varès under Government auspices are very successful. The output of iron ore in 1905 was 122,205 metric tons.

*Salt.*—The extraction of salt from natural brine springs dates back, at least, to Roman times, and probably very much further. As in the Austro-Hungarian Empire, the industry is a State monopoly. Numerous borings have proved that the deposits near Dolnja Tuzla are capable of yielding an ample supply of brine in the future, to say nothing of rock salt. Of the 1,947,607 hectolitres of brine obtained from the salt springs at Dolnja Tuzla, 1,220,046 hectolitres were piped 6 miles to Lukavac in the year 1905, and there made into soda by the ammonia process, and 720,878 hectolitres to the salt works, from which 20,288 metric tons of table salt were produced.

TABLE 414.

PERSONS EMPLOYED at MINES and SALT WORKS during the Years 1904 and 1905.

Year.	Coal Mines.	Iron Mines.	Other Mines.	Salt Works.	Total.
1904 ... ..	1,371	344	330	243	2,288
1905 ... ..	1,633	389	454	274	2,750

\* Official Return furnished by the Central Statistical Office, Budapest, and taken from the *Magyar Statisztikai Évkönyv*, New Series xii., 1904, Budapest.

† Official Return furnished by the Central Statistical Office, Budapest, and taken from the *Magyar Statisztikai Évkönyv*, New Series xiii., 1905.

‡ Official Return furnished by the "Bosn.-herc., Montanbureau," and published in the *Oesterreichische Zeitschrift für Berg- und Huttenwesen*, LIV. Jahrgang, 1906.

TABLE 415.

QUANTITY and VALUE of MINERAL produced during the Years 1904 and 1905.

Mineral	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Brown coal ... ..	483,617	2,146,044	540,236	2,381,195
Chrome ore ... ..	278	18,952	186	13,048
Copper ore ... ..	640*	28,800	670*	46,900
Iron ore ... ..	137,540	567,587	122,539	612,698
Iron pyrites ... ..	10,421	208,414	19,045	380,900
Manganese ore ... ..	1,114	33,420	4,129	87,393
Salt (Brine) ... (hectolitres)	1,674,839	131,476	1,947,607†	177,090
Total value in Crowns	—	3,134,693	—	3,699,224
Total value in £ sterling	—	£130,504	—	£154,006

TABLE 416.

DEATHS at MINES during the Years 1904 and 1905.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
Brown coal...	15	—	15	—	—	—	15	9·19
Iron ... ..	1	—	1	—	—	—	1	2·57
Other ... ..	—	—	—	—	—	—	—	—
Total for 1905.	16	—	16	—	—	—	16	5·82
Total for preceding year.	4	—	4	—	—	—	4	1·96

Eleven persons were killed by firedamp explosion and fire in the Bosnian coal mines in 1905.

Banca and Billiton. (See DUTCH EAST INDIES.)

Bavaria. (See GERMAN EMPIRE.)

\* All this quantity was Fahlora.  
† 720.878 hectolitres of this quantity were used in the production of 20,288 metric tons of salt.



### Belgium.

Coal mining is the most important mineral industry in Belgium; the ore mines are of little note, but the quarries of various kinds of stone have an output of considerable value.

*Coal.*—There are five coal-mining regions known respectively as the Couchant de Mons, Centre, Charleroi, Namur, and Liège. Of these the Charleroi region is the most productive, yielding more than one-third of all the coal of Belgium.

The total output of coal in 1905 was 21,775,280 metric tons; this amount shows a decrease on the figures for 1904 of 986,150 tons, due to a strike in the coal mining industry in the early months of the year.

Important discoveries of coal have been made by borings to the North and North East of Hasselt,\* and it has been already ascertained that the new basin extends over an area of some 400 square miles; it is hoped that it will continue as far to the West as Antwerp. Numerous borings have proved a total thickness of 33 feet (10 metres) of coal. The results of the latest borings are published in the *Annales des Mines*.†

There were 37 coking plants at work in the provinces of Liège and Hainaut, and one each in the provinces of Antwerp and West Flanders, and the total production of coke therefrom was 2,238,920 tons. The briquette factories in the provinces of Hainaut, Namur and Liège numbered 46, and 1,711,920 tons of briquettes were manufactured thereat in 1905.

The workings for mineral in Belgium are classified in the official statistics under three heads: (1) Coal Mines; (2) Ore Mines; (3) Quarries.

TABLE 417.

#### PERSONS EMPLOYED.‡

Kind of Workings.	1904.			1905.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Coal Mines ... ..	100,476	38,091	138,567	97,705	37,042	134,747
Ore Mines... ..	288	540	828	331	367	698
Quarries (Open and Under-ground) ... ..	—	—	37,913	—	—	38,641
Total ... ..	—	—	177,308	—	—	174,086

\* Lambert. *Le Grand bassin houiller et les nouvelles richesses minérales du Nord de la Belgique et du Sud de la Hollande*. Brussels. 1902; Stainier. "Études sur le bassin houiller du Nord de la Belgique." *Bull. Soc. Belge de Géologie*. Brussels, Vol. XVI., 1902, p. 77 and "État des Recherches dans le bassin houiller de la Campine," *Soc. Belge de Géologie*, 16 December, 1902; and Harzé. "Le bassin houiller du Nord de la Belgique." *Soc. Belge des Ingénieurs et des Industriels*, 1902.

† Vol. x., p. 729, and vol. xi., p. 335.

‡ *Statistique des Industries Extractives et Métallurgiques et des Appareils à Vapeur en Belgique pour l'année 1904 and l'année 1905*, published in the *Annales des Mines de Belgique*, Vol. X. Brussels.

BELGIUM—continued.

TABLE 418.

PERSONS EMPLOYED at COAL MINES during the Years 1904 and 1905.\*

Year.	Under-ground.							Above-ground.							Total Under-ground and Above-ground.
	Males.			Females.			Total.	Males.			Females.			Total.	
	Ages.			Ages.				Ages.			Ages.				
	12 to 14.	14 to 16.	Above 16.	14 to 16.	16 to 21.	Above 21.		12 to 14.	14 to 16.	Above 16.	12 to 16.	16 to 21.	Above 21.		
1904 ...	2,475	4,690	93,275	—	—	36	100,476	1,556	1,643	27,087	2,761	3,612	1,432	38,091	138,567
1905 ...	2,262	4,510	90,908	—	—	25	97,705	1,562	1,609	26,210	2,904	3,343	1,414	37,042	134,747

The average output per underground worker was only 223 metric tons in the year 1905, compared with 360 metric tons in this country ; the reason of this is the small size of the seams, which on an average are only 2 feet 1·6 inches (65 c.m.) thick.

It is evident from Table 419 that within the next year or two female labour below-ground will cease in Belgium. Thirty years ago, from 8,000 to 9,000 girls and women were employed in the Belgian Collieries below-ground.†

TABLE 419.

FEMALES employed BELOW-GROUND at MINES in the Years 1891–1905.

Year.				Under 16 Years.	16 to 21 Years.	Above 21 Years.	Total.
1891 ...	...	...	...	683	2,285	723	3,691
1892 ...	...	...	...	219	1,957	719	2,895
1893 ...	...	...	...	44	1,505	623	2,172
1894 ...	...	...	...	—	1,076	542	1,618
1895 ...	...	...	...	—	673	595	1,268
1896 ...	...	...	...	—	291	597	888
1897 ...	...	...	...	—	87	549	636
1898 ...	...	...	...	—	19	405	424
1899 ...	...	...	...	—	—	289	289
1900 ...	...	...	...	—	—	191	191
1901 ...	...	...	...	—	—	120	120
1902 ...	...	...	...	—	—	84	84
1903 ...	...	...	...	—	—	55	55
1904 ...	...	...	...	—	—	36	36
1905 ...	...	...	...	—	—	25	25

\* *Statistique des Industries Extractives et Métallurgiques et des Appareils à Vapeur en Belgique pour l'année 1905.*  
† *Harzé. Annales des Mines de Belgique*, Vol. VI., Brussels, 1901, pp. 603–605.



## BELGIUM—continued

TABLE 420.

## COAL MINES.

PARTICULARS CONCERNING COAL SEAMS, OUTPUT OF COLLIERIES, and WAGES for the Year 1905.\*

District.	Number of Days Coal was wound.		Total Output.	Total Number of Square Metres worked.	Output per Square Metre worked.	Annual Output.			Wages.		Average Daily Wage.													
	Average per Group of Collieries.	Total per Colliery.				Metric Tons.	Metric Tons. Tonnes.	Metric Tons. Tonnes.	Per Worker at the Face.	Per Underground Worker.	Per Worker Under and Above ground.	Total Number of Days worked.	Gross.	Net.	Per Worker Underground Worker.		Per Worker Above-ground.		Per Worker Under and Above-ground.		Per Worker at the Face.			
															Gross.	Net.	Gross.	Net.	Gross.	Net.	Gross.	Net.	Gross.	Net.
Mons ... ..	282	287	4,477,270	5,796,970	·772	689	184	142	9,109,670	32,664,240	Francs.	Francs.	Fr.	Fr.	Fr.	Fr.	Fr.	Fr.	Gross.	Net.	Gross.	Net.		
Centre ... ..	286	288	3,391,140	4,112,690	·824	812	207	152	6,458,280	25,938,760	25,158,060	4·32	4·18	3·20	3·11	4·02	3·90	4·96	4·80	4·96	4·80	4·96	4·80	
Charleroi ... ..	268	280	7,280,320	7,669,410	·950	987	250	169	11,947,760	48,351,750	47,865,550	4·56	4·50	2·99	2·98	4·05	4·01	4·99	4·95	4·99	4·95	4·99	4·95	
Namur ... ..	280	286	742,140	798,680	·930	1,003	270	183	1,209,230	4,906,300	4,871,650	4·55	4·52	3·02	3·01	4·06	4·03	4·92	4·87	4·92	4·87	4·92	4·87	
Liège ... ..	296	299	5,874,410	6,963,540	·840	1,066	234	174	10,271,720	42,372,800	42,041,900	4·53	4·49	2·97	2·96	4·13	4·09	5·15	5·13	5·15	5·13	5·15	5·13	
Total* and Averages for 1905	282	289	21,775,290	25,341,290	·859	896	223	162	38,996,660	154,232,350	152,155,510	4·34	4·28	2·96	2·93	3·95	3·90	4·84	4·79	4·84	4·79	4·84	4·79	

\* Statistique des Industries Extractives et Métallurgiques et des Appareils à vapeur en Belgique, pour l'année 1905.

## BELGIUM—continued.

TABLE 421.

QUANTITY and VALUE of MINERALS produced from MINES and QUARRIES\* during the Years 1904 and 1905.†

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
Barytes ... .. <i>Metric Tons</i>	60,000	Francs. 225,000	26,000	Francs. 260,000
Chalk ... .. <i>Cubic Metres</i>	450,400	599,420	372,000	586,020
China clay ... .. <i>Metric Tons</i>	2,375	21,350	1,600	13,400
Clay (other than China Clay) and Shale. }	366,135	2,427,170	322,750	2,251,910
Coal ... .. "	22,761,430	286,648,150	21,775,280	275,164,500
Flint (for earthen- ware, &c.). }	20,950	126,500	12,800	39,650
Iron ore ... .. <i>Metric Tons</i>	206,730	897,600	176,620	694,850
Lead ore ... .. "	91	7,910	126	13,050
Lime ... .. <i>Cubic Metres</i>	1,645,655	10,855,190	1,493,745	10,107,770
Manganese ore ... .. "	485	4,400	—	—
Ochre ... .. <i>Metric Tons</i>	450	8,250	620	10,800
Phosphate of lime ... .. "	202,480	1,307,060	193,305	1,721,720
Phosphatic chalk ... <i>Cubic Metres</i>	311,640	1,297,400	80,380	374,630
Pyrites ... .. <i>Metric Tons</i>	1,075	10,750	976	4,900
Quartz (for earthenware) ..	4,500	18,000	750	3,000
Sand ... .. <i>Cubic Metres</i>	807,715	1,257,045	775,395	1,273,350
Slate ... .. }	41,240,000	1,585,100	41,435,000	1,576,650
Stone, &c. :—	10,635	38,000	15,215	19,080
Building stone dressed <i>Cubic Metres</i>	259,377	20,406,060	244,615	20,251,710
Dolomite ... .. "	48,600	101,250	78,860	137,450
Flags ... .. <i>Square Metres</i>	60,995	445,185	68,240	360,745
Gravel and broken stone. }	12,500	56,150	26,895	80,440
Hone stones and scythe stones. }	135,700	92,750	154,820	113,050
Limestone ... }	100	1,500	120	2,150
Marble ... .. "	213,320	460,950	250,500	436,350
Marble ... .. "	17,740	2,905,650	17,254	2,709,600
Paving stone ... .. <i>Number</i>	117,412,000	12,780,020	115,440,000	12,996,680
Rough and broken stone. <i>Cubic Metres</i>	3,054,265	7,052,350	3,303,910	8,071,065
Zinc ore ... .. <i>Metric Tons</i>	3,702	229,140	3,929	330,800
Total value in Francs ...	—	351,865,300	—	339,605,320
" " £ sterling ...	—	14,074,612	—	13,584,213

\* Excluding the two Flanders and the Province of Antwerp which only furnish Tertiary clays for making bricks and tiles, and sand used in making glass and for other purposes.

† *Statistique des Industries Extractives et Métallurgiques et des Appareils à Vapeur en Belgique pour l'année 1904 and l'année 1905*, and published in the *Annales des Mines de Belgique*, vol. xi., Brussels.



## BELGIUM—continued.

TABLE 422.

NUMBER OF DEATHS FROM ACCIDENTS AT MINES AND QUARRIES during the Years 1904 and 1905.\*

Year.	Kind of Workings.	Under-ground.	Above-ground.	Total.	Number of Deaths per 1,000 Persons Employed.		
					Under-ground.	Above-ground.	Total.
1904	Coal mines	111	18	129	1·10	·47	·93
"	Ore mines	—	—	—	—	—	—
"	Quarries (open)	—	—	26	—	—	·84
"	" (underground)	—	—	6	—	—	—
1905	Coal mines	113	10	123	1·16	·27	·91
"	Ore mines	—	—	1	—	—	1·43
"	Quarries (open and underground).	—	—	9	—	—	·23

A Committee appointed by the Minister of Agriculture and Commerce to enquire into Ankylostomiasis in Belgian mines reported that 6·35 per cent. of the workers employed in the Mons district were affected with the disease. In the Charleroi district the percentage was only ·58.†

Particulars of recent experiments with certain types of safety-lamps, which were submitted at the Government experimental station at Frameries for approval in accordance with the Decree of the 19th August, 1904, are published in the *Annales des Mines de Belgique*.‡

## Bohemia. (See AUSTRIA-HUNGARY.)

## Bolivia.§

Bolivia is remarkable as being the great tin-producing country of South America; it likewise yields antimony, bismuth, cobalt, copper, gold, manganese, silver and wolfram, besides a little borax. Petroleum exists in the country, but it has not yet been worked for commercial purposes. Only a part of the mines are worked at present, owing to the difficulties of transport and communication with the coast. Another difficulty is the want of cheap motive power.

Coalfields have been found in the department of Tarija almost on the border of Argentina.

*Bismuth.*—This mineral is obtained from the Chorolque mines in the department of Potosi.

*Copper Ore.*—The copper ore of the Corocoro district is rich enough to pay heavy transport expenses to Mollendo (Peru), whence it is shipped to Europe. The output in 1905 was more than double that of 1904.

*Gold.*—The precious metal is extracted from alluvial gravels, especially in the Eastern valleys of the Cordillera Real, in the upper branches of the La Paz River, and in valleys radiating from Mount Sorata. The Araca Mines, owing to poorness of ore and the difficulty of transporting machinery are no longer worked.

*Silver.*—Silver mining, which in former years was the chief industry, has greatly decreased of late, partly owing to the fall in value of silver in the European markets, and partly to the mines being more or less worked out. The silver at present produced in Bolivia comes from the famous mines at Huanchaca, San José and Oruro.

\* *Op. cit.*, pour l'année 1904 and l'année 1905.

† *Annales des Mines*, Année 1906, vol. xi., Part 2, Bruxelles, pp. 459 and 500.

‡ Vol. xi., Part 4, p. 1099.

§ Information furnished by Mr. Consul G. Harrison, La Paz, and also taken from his report on the Trade of Bolivia for the years 1904-5, *Dipl. and Cons. Reports*, No. 3600, Ann. Ser. 1906 [Cd. 2682-125.]

## BOLIVIA—continued.

*Tin Ore.*—Tin mining is the principal industry of the Republic. There are four tin-producing districts, viz., La Paz, Oruro Potosi, and Chorolque; the ore is obtained chiefly from veins. The total quantity of tin ore exported from Bolivia during the year 1905 was 26,424 metric tons, valued at £1,131,895, which exceeds that of the preceding year by 5,732 tons, and £365,920 in value. 96 per cent. of the output was obtained from the Oruro and Potosi districts.

TABLE 423.

QUANTITY and VALUE of MINERALS produced and exported through the Ports of Antofagasta and Mollendo during the Years 1904 and 1905.\*

Description of Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Bolivians.	Metric Tons.	Bolivians.
Antimony ore ... ..	7	2,840	17	Not stated
Bismuth ... ..	406	807,101	592	1,185,552
Borate of calcium ... ..	1,080	102,720	2,146	Not stated
Cobalt ore ... ..	1	39	Not stated	"
Copper, ingots ... ..	3,228	1,612,345	6,708	3,564,955
" precipitate ... ..				
" matte ... ..				
" ore ... ..	Kilos. 33	48,665	Kilos. 32	42,740
Gold ... ..				
Silver ... ..				
" ingots ... ..	21,172	4,013,463	8,266	3,699,394
" ore ... ..				
" sulphide ... ..				
Tin, ingots ... ..	20,692	9,191,701	26,424	13,582,735
" ore ... ..				
Wolfram ... ..	700	61,618	68	Not stated
Total value in Bolivians... ..	—	15,840,492	—	22,075,376†
" " £ sterling ... ..	—	£1,320,041	—	£1,839,615

Bonaire. (See DUTCH WEST INDIES.)

Borneo. (See BRITISH BORNEO and DUTCH EAST INDIES.)

Bosnia. (See AUSTRIA-HUNGARY.)

## Brazil.

The mineral resources of Brazil are no doubt great, but working of the deposits is retarded by unsatisfactory mining legislation, and by the want of adequate facilities of communication with the mineral districts. Another obstacle to the progress of the mining industry is the difficulty of satisfactorily registering title deeds.‡ No official statistics are published by the Brazilian Government.

In addition to diamonds and gold, Brazil is yielding coal, iron ore, manganese ore, and monazite sand. Petroleum and the ores of copper and lead exist in workable quantities.

\* Return furnished by Mr. Consul G. Harrison, La Paz.

† Excluding value of Antimony ore, borate of Calcium and Wolfram.

‡ Acting Consul-General Rhind, "Trade of Rio de Janeiro for 1903." *Dipl. and Cons. Reports*, No. 3,283, Ann. Ser., 1904 [Cd. 2236-27], pp. 7 and 8.



## BRAZIL—continued.

*Coal.\**—There are deposits of coal in Rio Grande do Sul, Santa Catharina and Paraná. The coal of the Tubarao mines in South Santa Catharina has recently been examined by engineers who have reported that it is suitable for briquettes.

*Copper Ore.*—The only mine worked for copper is that of Gamaqua in Rio Grande do Sul, although rich deposits exist also in the States of Bahia, Maranhão, and Seara.

*Diamonds.*—The most important diamond districts in Brazil are Diamantina, Grao Mogul, Chapada Diamantina, Bagagem, Goyaz, and Matto Grosso. The value of the precious stones (mostly diamonds) which were exported in 1905 amounted to £71,316.

*Gold.†*—The State of Minas Geraes, which contains the famous mines of St. John del Rey and Ouro Preto, is the principal gold producer. The gold industry in Northern Brazil on the borders of French and British Guiana, appears to have ceased.

*Iron.‡*—The deposits of iron ore in the State of Minas Geraes are particularly rich and extensive. Iron also abounds in the State of Santa Catharina.

*Manganese§* mining in Brazil was only started in 1894. The principal workings are at Miguel Burnier, Queluz, Sao Goncalo and Piquiry in the province of Minas Geraes, respectively 287 miles (462 kil.) and 308 miles (496 kil.) from Rio. There are also mines near Nazareth, 50 miles to the west of Bahia, and immense and easily accessible deposits at Urucum in the Matto Grosso district.

*Monazite Sand||* is obtained near the town of Prado in the north of the State of Bahia, and the trade there remains in the hands of one firm; in 1905 the quantity shipped was 4,437 tons. Discoveries of Monazite have recently been made in the States of Espírito Santo and Rio de Janeiro.

*Phosphate of Lime.*—This mineral exists on the Island of Rata, near the Island of Fernando da Noronha.

*Salt.¶*—The quantity exported from Sergipe in 1901 was 11,535 metric tons, valued at £6,474.

TABLE 424.

QUANTITY and VALUE of MINERALS produced and exported during the Years  
1904 and 1905.\*\*

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons,	£
Gold (bar) exported ...	Kilos. 3,871	418,309	Kilos. 3,879	420,128
Manganese ore (exported) ...	208,260	306,799	224,377	332,827
Monazite (exported) ...	4,860	108,825	4,437	100,038
Precious stones (exported)...	—	65,958	—	71,316
Salt ... ..	††	—	††	—

\* Acting Consul-General Rhind, "Trade of Rio de Janeiro for the year 1903." *Dipl. and Cons. Reports*, No. 3,283, Ann. Ser. 1904 [Cd. 2236-27], p. 14, and Vice-Consul Chaplin, "Trade of Santa Catharina for the year 1905," *Dipl. and Cons. Reports*, No. 3,737, Ann. Ser. 1906 [Cd. 2682-262].

† Rhind, *op. cit.*, pp. 19 and 20, and Consul Churchill, "Trade of Pará for the years 1898 and 1899." *Dipl. and Cons. Reports*, No. 2,389, Ann. Ser. 1900 [Cd. 1-26], p. 6, and "Trade of Pará for the years 1903 and 1904" No. 3,436, 1905, [Cd. 2236-180].

‡ Rhind, *op. cit.*, p. 8, and Chaplin, *op. cit.*, p. 6.

§ Rhind, *op. cit.*, p. 35, and H. K. Scott, "The Manganese Ores of Brazil." *Jour. Iron and Steel Institute*, Vol. LVII., 1900, p. 179.

|| Consul Medhurst, "Trade of Bahia for the year 1903." *Dipl. and Cons. Reports*, No. 3,256, Ann. Ser., 1904 [Cd. 2236], pp. 8, 10 and 11.

¶ Consul Medhurst, "Trade of Bahia and Sergipe for the year 1901." *Dipl. and Cons. Reports*, No. 2,888, Ann. Ser. 1902 [Cd. 786-192], pp. 10 and 14.

\*\* Consul-General Chapman, "Trade of Brazil for the year 1905," *Dipl. and Cons. Reports*, No. 3,713, Ann. Ser. 1906 [Cd. 7682-238], pp. 19 and 20.

†† Figures not received.

BULGARIA.]  
CAMEROONS.]

Bulgaria.\*

Bulgaria possesses fairly rich deposits of coal and lignite ; the ores of copper, iron, lead, and manganese are known to exist, but are not yet worked. Gold is obtained in many places from the sand of rivers. Limestone and marble are quarried on a small scale.

*Lignite.*—The State works lignite mines at Pernik and Bobovdol. The Pernik colliery is about 19 miles from the capital, with which it is connected by a railway, and it can therefore be worked to advantage. The Bobovdol colliery is far from any railway, and is worked to supply local wants only, the total output being only about 2,000 tons a year.

The Trévna coalfield, 38 miles from Tirnovo, likewise lacks a railway for getting rid of its produce, and is worked on a very limited scale indeed.

TABLE 425.  
PERSONS EMPLOYED at the PERNIK LIGNITE MINES.

	Year.					Number of Persons Employed.	
	1904	...	...	...	..	2,305	
	1905	...	...	...	...	1,760	

TABLE 426.  
QUANTITY and VALUE of LIGNITE produced at the PERNIK MINES during the Years 1904 and 1905.

Year.					Quantity raised.	Value.
					Metric Tons.	
1904	...	...	...		142,315	{ Francs ... 1,305,785 { £ sterling ... 52,231
1905	...	...	...		168,080	{ Francs ... 1,305,422 { £ sterling ... 52,216

No deaths occurred at the Pernik lignite mines during the years 1904 and 1905.

In Bulgaria an applicant for a concession is limited by the mining laws of that country to a grant of land not exceeding 1,250 acres in area. Concessions are only granted after a commission of mining experts, appointed by the Ministry of Commerce and Agriculture, has examined the property and certified that there is every probability of its proving profitable for mining.†

Cameroons.‡

*Salt.*—Important brine springs are known in the Keaka district and near the Cross River.

\* Official information furnished by the Chief of the Section of Mines of the Ministry of Commerce and Agriculture, Sofia.  
† Vice-Consul Toulmin, "Trade of Bulgaria for the year 1905," *Dipl. and Cons. Reports*, No. 3630, Ann. Ser., 1906 [Cd. 2682-155], p. 8.  
‡ Buchanan, "Report on the German Colonies for the year ending 30th June, 1901." *Dipl. and Cons. Reports*, Ann. Ser., No. 2,790 [Cd. 786-94]. London, 1902, p. 14.



### Canary Islands.

Lava and consolidated volcanic ash are quarried in various places for supplying building stone and paving slabs.

Loose cinders, dug from the sides of volcanic cones, are utilised for the manufacture of big blocks of concrete.

Pumice stone is obtained from the flanks of the Peak of Teneriffe and exported into England. 6 tons valued at 60 *pesetas* (£2) were obtained in 1904, and 54 tons valued at 540 *pesetas* (£21) in 1905.\*

Limestone for local use is quarried in Fuerteventura, and to a small extent in Grand Canary. This latter island has a set of pans in which salt is obtained from sea-water by solar evaporation.

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### Celebes (See DUTCH EAST INDIES).

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### Chili.

A very useful publication † on the mineral industry of Chili was issued in 1905 under the direction of the Sociedad Nacional de Minería. The volume contains a full description of the minerals which exist in the country, and is illustrated with maps showing the geology of the country and the localities of the mineral deposits.

The wealth of Chili is largely due to its mineral treasures, of which nitrate of soda is the most important.

Nearly the whole of the mineral produce is exported to other countries; the quantities of metal contained in the ores are now given in Table 428. The total value of the minerals exported from Chili in 1905 amounted to £16,513,300, and it appears from Acting Consul-General Rowley's report that over 42 per cent. of this amount was for the United Kingdom, 21 per cent. for Germany, 19 per cent. for the United States, and 9 per cent. for France.‡

*Borate of Lime.* †—Chili is one of the principal producers of borate in the world. Its chief deposits are at Ascotan, Ollagüe, El Pedernal and Maricunga. Valuable deposits, containing more than 600,000 tons of the mineral, are stated to exist within reach of the Port of Taltal, but the latter will remain undeveloped until the demand, which is amply supplied at present by Antofagasta and Peru, increases.

*Coal.* †—The principal coal-fields are South of Concepcion. The coal, which is of Eocene age, has been extensively worked for many years at Coronel and Lota, in the Department of Lautaro; these two places furnish the bulk of the output. Still further South there is coal of Miocene age extending to the Straits of Magellan.

*Copper.* †—Copper mining, once the chief mineral industry of the country, is still of considerable importance. The copper resources of the country are said to be great. Copiapó is the principal copper-producing district. The total quantity of fine copper exported from Chili and Bolivia in 1905 was 29,631 metric tons.

*Gold.*—Dredging for gold in the rivers of Patagonia and Tierra del Fuego is now being undertaken.

*Guano.*—The exportation of this mineral is prohibited by the Government, and the quantity obtained is sold and distributed among the southern parts of Chili. In 1903 the production was 11,133 metric tons, and of this quantity 9,842 tons were sent from the sub-port of Punta Pichalo for distribution.†

*Nitrate of Soda.* §—This industry continues to flourish. In the year 1903 there were 86 saltpetre works in operation, of which 72 were in Tarapacá; they produced 1,461,825

\* *Estadística Minera de España correspondiente al año de 1905*, Madrid, 1906, p. 50. These figures are also included with Spain.

† *Estadística Minera de Chile*, 1903, Vol. I, Santiago, 1905, and Acting Consul-General Rowley, "Trade of Chili for the year 1905." *Dipl. and Cons. Reports*, No. 3,693, Ann. Ser., 1906 [Cd. 2682-223].

‡ Vice-Consul Rowley, "Trade of Chili for the year 1900." *Dipl. and Cons. Reports*, No. 2,700, Ann. Ser., 1901, pp. 28 and 29, and Consul-General Sir Berry Cusack-Smith, "Trade of Chili for the year 1903." *Dipl. and Cons. Reports*, No. 3,307, Ann. Ser., 1904 [Cd. 2236-51], and Acting Consul-General Rowley, "Trade of Chili for the year 1904." *Dipl. and Cons. Reports*, No. 3,465, Ann. Ser., 1905 [Cd. 2236-209].

§ *Memoria del Delegado Fiscal de Salitreras presentada al Señor Ministro de Hacienda en 1904*, Santiago de Chile, 1904, p. 33, and Anexos, pp. 69, 75, and 87.



## CHILI—continued.

metric tons of nitrate of soda and 157 metric tons of iodine. The diggings and works afforded employment to 24,445 persons, of whom 17,398 were Chilians, 2,795 Peruvians, and 3,317 Bolivians; the remaining 935 persons belonged to various nationalities. The principal ports at which the nitrate is shipped are Iquique, Caleta Buena, and Tocopilla.

Some very interesting reports by Dr. A. Plagemann,\* and by Bergassessor Dr. Semper and Dr. Michels,† respectively, concerning the nitrate industry of Chili, were published in Germany in 1904.

*Salt.*‡—A bed of salt of unknown thickness and extending over an area of more than 120 square miles is being worked near Punta de Lobos. The output in 1903 was 16,263 tons, of which quantity over 10,240 tons were exported.

*Sulphur.*§—The sulphur is obtained from the mines near Arica as well as from the deposits at Taltal, but as the latter are situated at too great a distance from the port to be worked at a profit the operations are reduced to the extraction of sufficient mineral for the manufacture of powder used in excavating "Caliche" (the raw material from which nitrate of soda is manufactured).

TABLE 427.

NUMBER of PERSONS employed at MINES and MINERAL WORKINGS during the Year 1903.

Mines or Mineral Workings.						Persons Employed.
Coal Mines ...	...	...	...	...	...	6,437
Metalliferous Mines ...	...	...	...	...	...	13,710
Nitrate of Soda ...	...	...	...	...	...	24,445
Other Mineral Workings ...	...	...	...	...	...	2,000
Total ...	...	...	...	...	...	46,592

TABLE 428.

QUANTITY and VALUE of MINERALS and METALS produced during the Years 1904 and 1905. ||

Mineral or Metal.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Pesos.	Metric Tons.	Pesos.
Borate of Calcium ...	1,673	234,262	19,612	2,745,736
Coal ...	731,624	8,779,488	789,229	9,470,748
Cobalt ore ...	125	41,288	26	8,585
Copper (fine) ...	31,370	28,527,104	29,605	23,199,343
Gold (fine) ...	Kilos. 910	1,613,561¶	Kilos. 731	1,296,168¶
Guano ...	Not stated.	—	Not stated.	—
Iodine ...	461	5,768,550	564	7,052,875
Manganese ore ...	2,324	69,708	1,324	39,700
Nitrate of Soda ...	1,486,190	166,430,160	1,668,976	184,218,480
Salt ...	Not stated.	—	Not stated.	—
Silver (fine) ...	Kilos. 25,949	1,245,299	Kilos. 15,135	726,332¶
Sulphur ...	3,595	359,490	3,510	338,759
Sulphuric Acid ...	Not stated.	—	Not stated.	—
Other Minerals ...	"	—	"	—
Total Value in Pesos ...	—	213,068,910	—	229,096,726
" " " £ sterling ...	—	£15,980,168	—	£17,182,254

\* Der Chile Salpeter, Der Saaten-, Dünger- und Futtermarkt, S.W., 29, Berlin.

† Die Salpeterindustrie, Zeitschr., B.H. S.W., Vol. lii., Jahrgang, 1904, Berlin.

‡ Memoria del Delegado Fiscal de Salitreras presentada al Señor Ministro de Hacienda en 1904, Santiago de Chile, 1904, p. 33, and Anexos pp. 69, 75, and 87.

§ Estadística Minera de Chile, 1903, Vol. I., Santiago, 1905, and Acting Consul-General Rowley, "Trade of Chili for the year 1905," Dipl. and Cons. Reports, No. 3,698, Ann. Ser., 1906 [Cd. 2682-223].

|| Return furnished by the Sociedad Nacional de Minería, Santiago.

¶ Estimated.



## China.\*

China is rich in many minerals and more particularly in coal, which is widely distributed throughout the vast empire, and especially in the provinces of Pechili, Shan-si, Shan-tung, Ho-nan, and Hu-nan; indeed the richness in coal seems to be unparalleled. In many provinces iron ore is likewise abundant.

Among other minerals may be mentioned the ores of antimony, copper, gold, iron, lead, quicksilver, silver, tin, and zinc, besides petroleum, salt, and sulphur. A good general idea of the distribution of the mineral wealth of China is obtainable from a map accompanying some articles by Mr. Lynwood Garrison.†

The coal-fields of north-eastern China, and especially those of western Chili and eastern Shansi, have been described by Mr. Drake.‡

In 1904, 6,666 tons of antimony and antimony ore were obtained from the native mines of Hunan, and 3,867 tons of antimony ore were exported in 1905 from Changsha to the smelting works at Wuchang.§

The output of coal in 1903 from the Kaiping collieries in the province of Pechili was 700,000 tons.§

The province of Kuangsi has deposits of coal and the ores of antimony, gold, silver, copper, lead, iron and tin; and there are indications that this mineral wealth which has hitherto remained practically untouched will be exploited in the near future. The provincial regulations make mining by foreigners impossible; but every encouragement is being given to Chinese merchants to work the mines with native capital. In 1905 20 tons of tin were obtained from a mine in Ching Yüan district and shipped from Wuchow. The increased demand for native coal has encouraged the authorities to re-open and work as an official speculation a coal mine near Nanning. The province is believed to be richer in antimony than in any other mineral deposit, but owing to the export of the ore being a Government monopoly the output has ceased.||

An installation, under German management, erected at Wuchang, in the province of Hupe, to concentrate lead and zinc ores, is capable of treating 75 tons of ore daily. The iron mines at Ta-yeh shipped 38,108 tons of ore to Japan in 1904, and a large quantity was sent to the ironworks at Hanyang in the province of Kiangsi. The daily output of pig iron from the Hanyang works is about 120 tons.¶

The province of Sze-chuan,\*\* in the extreme west, is remarkable for its salt and natural gas. The annual output of the brine wells of Tze-liu-ching in Sze-chuan is estimated to be about 178,000 tons of salt. A concession granted in 1904 to mine coal and iron in Chiang-pei is about to be worked.

The province of Chi-li†† has yielded gold for many centuries. The metal occurs in quartz veins and in alluvial deposits; the output in 1898 was 50,000 ozs.

Coal and the ores of gold, iron, lead and silver are said to abound in the province of Fohkien. The goldfields in the Shao-wu district were surveyed in 1903, and reported as being very valuable.‡‡

The province of Kwei-chau§§ is rich in coal, ores of copper, iron, and quicksilver.

The province of Shan-si|||| is remarkable for its great wealth of coal. The total annual output, reckoned at 50,000 tons in 1900, is no index of the great resources of the

\* The "salt wells of China." *Jour. Soc. Arts*, Vol. XLVI., 1898, p. 385.

† Fearon and Allen.—"The Chinese, and recent industrial progress in China." *Eng. Mag.*, Vol. XVI., 1898, p. 166.

‡ M.R.D.—"Chinese Minerals." *The Investors' Review*, Oct. 1897, p. 216.

§ Jamieson.—"Coal and Iron in Eastern China." *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 365.

¶ Kurita.—"Coal and Iron Deposits of Eastern China." *Eng. Min. Jour.*, Vol. LXV., 1898, p. 491.

†† "The Mining and Industrial Development of China." *Mining and Metallurgy*, Vol. XXI., 1901, p. 65.

‡‡ *Trans. Am. Inst. M.E.*, vol. xxxi., 1901.

§ Jamieson, "Foreign trade of China for the year 1903." *Dipl. and Cons. Reports*, No. 3,280, Ann. Ser., 1904 [Cd. 2236-24], and Consul-General Fraser, "Trade of Hankow for the Year 1904." *Dipl. and Cons. Reports*, No. 3,386, Ann. Ser., 1905 [Cd. 2236-130], and Acting-Consul B. Giles, "Trade of Changsha for the year 1905," *Dipl. and Cons. Reports*, No. 3,708, Ann. Ser., 1906 [Cd. 2682-233].

|| Acting-Consul F. E. Wilkinson, "Trade of Wuchow for 1905." *Dipl. and Cons. Reports*, No. 3,588, Ann. Ser., 1906 [Cd. 2682-113].

¶ Jamieson, *op. cit.* No. 3,280; and Fraser, *op. cit.* No. 3,386.

\*\* Upercraft, "The Salt Wells of Sze-chuan, China." *Eng. Min. Jour.*, Vol. LXIX., 1900, p. 525; and Murdoch, "Notes on Brine and Oil Wells in Western China." *Trans. Inst. M. and M.*, Vol. IX., 1900-01, p. 362, and Hosie "Foreign Trade of China for the years 1904 and 1905." *Dipl. and Cons. Reports*, No. 3,725, Ann. Ser., 1906 [Cd. 2682-250].

†† Hoover, "Metal Mining in the Provinces of Chi-li and Shantung, China." *Proc. Inst. Min. and Met.*, Vol. VIII., 1900, pp. 324-331.

‡‡ Consul Mansfield, "Trade of Amoy for the year 1899." *Dipl. and Cons. Reports*, No. 2,502, Ann. Ser., 1900 [Cd. 1-139], p. 8, and Jamieson, *op. cit.*, No. 3,280.

§§ Prospectus of the Anglo-French Quicksilver and Mining Concession (Kwei-chau province) of China, Ltd., March, 1899.

|||| Drake, "The Coalfields around Tse Chou, Shan-si." *Trans. Amer. Inst. M. E.*, New York, 1900, and Jamieson, "Trade of Tientsin for the years 1900-03," *Dipl. and Cons. Reports*, No. 3,127, Ann. Ser., 1904 [Cd. 1766-61].



## CHINA—continued.

coalfields. The Peking Syndicate's new mineral line from Ching-hua to Tao-kou is now completed and will be a great advantage so far as the working of the anthracite deposits of the province of Shanhsi is concerned. Tse-chou on the Shanhsi plateau is reported to be one of the richest coal and iron regions in the world.

The province of Yunnan in 1905 exported 4,463 tons of tin valued at £514,034 from its mines at Ko-chiu, Chao Tung, An Ning, and other places, and 280 tons of lead (pig) valued at £3,905 from Chung-King. Salt is obtained from mines and brine wells near Pu Erh, and some of it is exported to the British Shan States and French Laos. The exports from Hankow of Yunnan ore in 1904 were 4,906 tons of lead ore and 3,162 tons of zinc ore.\*

The province of Shan-tung† possesses deposits of coal, copper, diamonds, gold, iron, lead, and silver. The first-named mineral is the most important; the output of coal from the Fangtzu mines in 1905 was 134,000 tons. An extensive bed of hæmatite in the neighbourhood of the I-chou-fu coalfield, which can be worked opencast, may be of importance to Kiao-chou in the future. Magnetic iron ore, containing 65 per cent. of iron, has been discovered near Ch'ing-ling-chên.

In the province of Kiangsi the output of the Pinghsiang Collieries is at present about 1,200 tons a day, but as soon as further railway facilities are completed it is anticipated that this amount will be increased to 3,000 tons. The coal obtained is used principally for the Hanyang ironworks. Near Siangtan a greater development of the iron mines is contemplated. Copper is mined to some extent in the province. In 1904, 99 tons of tin valued at £5,600 were exported from Kiukiang.‡

From Hankow 83,291 tons of coal valued at £100,203 and 13,757 tons of pig iron valued at £44,611 were exported in 1904, and 24,596 tons of pig iron valued at £100,114 and 5,615 tons of antimony and antimony ore valued at £44,677 in 1905.§

No mineral statistics are published by the Chinese Government.

The Director of the United States Mint states that 6,772 kilos. of fine gold of the estimated value of £924,025 were produced in 1904.||

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Cochin China. (See INDO-CHINA.)

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## Colombia.¶

According to Vice-Consul Gillies, Colombia has immense resources of mineral wealth.

*Asphalt.*—A deposit of asphalt is being worked near Chaparral, Tolima, and about 2,000 tons are being shipped per annum.

*Coal.*—Coal is mined on a small scale only, though extensive beds of bituminous coal occur in various parts of the country.

*Copper.*—Deposits of copper ore are known to exist, but they are unworked.

*Emeralds.*—Colombia holds almost a monopoly of the trade in these gems. The famous mines of Muzo in the Boyacá district, have been worked continuously for more than three centuries. The other emerald mines, which were formerly worked by the Spaniards, are Cosquez and Somondoco. The value of the production in 1903 was estimated at £20,000.

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\* Acting-Consul Sly, "Trade of Chung King for the year 1903." *Dipl. and Cons. Reports*, No. 3,290, Ann. Ser., 1904 [Cd. 2236-34]; Acting-Consul Carey, "Trade of Ssumao and Mengtse for the year 1900." *Dipl. and Cons. Reports*, No. 2,741, Ann. Ser., 1902 [Cd. 786-45]; Fraser, *op. cit.*, No. 3,386, and Consul-General Wilkinson, "Trade of Mengtzu for the year 1905." *Dipl. and Cons. Reports*, No. 3,711, Ann. Ser., 1906 [Cd. 2682-236].

† Buchrucker, "Ueber eine bergmännische Forschungsreise in der Provinz Shantung." *Zeitschr. f. prakt. Geologie*, 1899, p. 206, Jamieson, *op. cit.*, No. 3,280, and Hosie, *op. cit.*, No. 3,725.

‡ Consul Clennell, "Trade of Kiukiang for the year 1902-03." *Dipl. and Cons. Reports*, No. 3,293, Ann. Ser., 1904 [Cd. 2236-37], and Consul Werner, *op. cit.*, for the year 1905, No. 3,714 [Cd. 2682-239].

§ Fraser, *op. cit.*, No. 3,386, and Hosie, *op. cit.*, No. 3,725.

|| *Report of the Director of the United States Mint for the year ended June 1905*, Washington, 1905.

¶ Granger and Treville, "Mining Districts of Colombia." *Trans. Am. Inst. Min. Eng.*, Vol. XXVIII., 1898, Vice-Consul Dickson, "Trade of Colombia (excepting the Panama District) for year 1901." *Dipl. and Cons. Reports*, No. 2,747, Ann. Ser., 1902 [Cd. 786-51], *ibid* for 1903, No. 3,114 [Cd. 1766-48], and "Trade of Barranquilla for the year 1905." *Dipl. and Cons. Reports*, No. 3,678 [Cd. 2682-203].



## COLOMBIA—continued.

*Gold.*—This is the most important mineral of the country. The precious metal is obtained by hydraulic mining, by dredging the beds of existing rivers, and by working auriferous veins. Antioquia, Cauca, and Choco are the principal mining districts.

*Manganese ore.*\*—This ore is obtained about 40 miles east of Colon.

*Salt.*—Rock salt is mined near Bogota.

*Silver.*—Tolima is the principal district of the silver mines.

TABLE 429.

QUANTITY and VALUE of GOLD and SILVER produced during the Years 1903 and 1904.†

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
Gold (Fine) ... .. Kilos.	4,100	£ 559,425	2,971	£ 405,421
Silver (Fine) ... .. Kilos.	35,117	125,154‡	29,432	112,669‡

## Congo Independent State.§

No mines have as yet been worked by Europeans ; but the natives of the Upper Congo dig a little iron ore and copper ore, and extract the metals for the purpose of making weapons, tools and utensils. 146 kilograms of crude gold, valued at 478,272 francs, and 8 tons of tin valued at 33,635 francs, were obtained from mineral workings at Katanga and exported in 1905. 1,458 kilograms of copper ore were sent to Europe, during the year, for the purpose of assay.

## Corea.||

Although during 1905 little progress was made towards developing the rich mineral resources of Corea, there appear to be signs of greater activity in the near future. A considerable amount of prospecting work has been done. A new mining law has recently (June, 1906) been passed.

Coal, which has already been mined in Ping-Yang, is now known to exist in five of the provinces, and one field in Kyeng Sang province is reported to contain a seam 10 feet 9 inches thick. Large deposits of smokeless coal exist in the country.

The value of the gold exported from Corea in 1905 amounted to £531,528, but this sum does not include the value of the gold carried away by persons in their luggage. Gold is being worked in the province of Ping-Yang, and is mainly obtained from quartz mines worked by American and European companies. The Gwendoline mine in the Unsan district in the year 1900 employed 736 persons, and another gold mine at Tangokae, or Kimo Song, employed more than 500.

In addition to the gold, 3,695 tons of coal valued at £2,926, 89 tons of copper ore valued at £3,170, and 1,069 tons of iron ore valued at £350, were also exported in 1905.

## Costa Rica.¶

There are two groups of gold mines near the Pacific Coast which are being worked regularly, viz., the Bella Vista Group near Miramar, 15 miles from Puntarenas, and the Abangares group, 18 miles from Puerto Yglesias on the Gulf of Nicoya. At the latter the Abangares Goldfields Company have erected a new 40-stamp mill and crushing was commenced on 1st July, 1905. Several other mines are in course of development. The value of the gold from the mines exported during the year 1904 amounted to £8,367, and in 1905 to £58,058.

\* *Trans. Am. Inst. Min. Eng.*, Vol. XXVII., 1897, p. 63.

† *Report of the Director of the United States Mint for the year ended June, 1905*, Washington, 1905.

‡ Commercial value of fine silver.

§ Information furnished by the Département des Affaires étrangères and the Département des Finances, Brussels.

|| Consul Lay, "Trade of Corea for the year 1903." *Dipl. and Cons. Reports*, No. 3,220, Ann. Ser. [Cd. 1766-154], 1904 ; and Acting Vice-Consul Harrington, *op. cit.* for 1905, No. 3,660 [Cd. 2682-185], 1906.

¶ Consul Cox, "Report on the Trade of Costa Rica for the year 1904." *Dipl. and Cons. Reports*, No. 3,444, Ann. Ser., 1905 [Cd. 2236-188], and for 1905, No. 3,615 [Cd. 2682-140], 1906.



## Cuba.\*

Besides asphalt, copper, iron, and manganese, which have been more or less constantly mined in Cuba, there are many other minerals to be found distributed throughout the island, such as asbestos, clay, coal, gold, lead, limestone, mercury, naphtha, petroleum, silver, and zinc.

*Asphalt.*—A number of mines are worked for asphalt in the province of Habana, but large deposits exist in several other places.

*Clay.*—Clay fit for making bricks and tiles is abundant.

*Copper ore.*—The bulk of the copper ore which is raised at the present time comes from the celebrated workings of El Cobre in the province of Santiago de Cuba. The mineral also occurs in many places in the eastern part of the island.

*Gold.*—This metal is said to abound in the provinces of Santa Clara and Santiago, but the deposits are little worked.

*Iron ore.*—The latter province possesses extensive deposits of iron ore, and the mineral is obtained by quarrying; there are no mines in the ordinary sense of the term. The Spanish-American Iron Co. and the Juragua Iron Co. are the principal producers.

*Limestone.*—This rock abounds everywhere. In 1901 the quantity of stone (principally limestone) obtained was 461,025 cubic metres, valued at £176,621. Much of the lime obtained in Cuba is used for bleaching the sugar.

*Manganese ore.*—The deposits of manganese ore hitherto worked are situated near La Maya and El Christo in the vicinity of the city of Santiago. Much of the Cuban ore contains from 47 to 50 per cent. of metal, and is exported to the United States.

TABLE 430.

QUANTITIES AND VALUES OF MINERALS EXPORTED during the years 1904 and 1905.

Description of Mineral.	1904.		1905.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Asphalt ... ..	8,926	24,493	11,996	26,642
Copper Ore ... ..	17,573	60,090	21,204	82,079
Iron Ore... ..	386,724	177,383	520,722	237,908
Manganese Ore ... ..	17,683	18,269	12,133	12,230
Other Minerals ... ..	—	—	—	23,029
Total Value ... ..	—	280,235	—	381,888

## Curaçao. (See DUTCH WEST INDIES.)

## Denmark.‡

Chalk and calcareous marl are quarried near Aalborg. The total quantity of cement and raw chalk produced in 1904 was 320,000 tons.

Bog iron ore exists in Jutland,§ and in years gone by it was occasionally worked and smelted on a small scale.

## FAROE ISLANDS.||

For at least two centuries it has been known that the island of Suderö possesses deposits of coal, and it is rumoured that they will be worked.

\* Estadística General, Año Fiscal de 1904—1905, Habana, 1906, p. 181; "Commercial Cuba in 1903," published by the United States Bureau of Statistics, Washington, 1904, p. 1,207; and Carden, "Trade of Cuba for the year 1904." *Dipl. and Cons. Reports*, No. 3,484, Ann. Ser., 1905 [Cd. 2682-9 and 47], and information furnished by the Secretaria de Hacienda of Cuba to the United States Geological Survey.

† Fiscal Year ended 30th June, 1905.

‡ Consul Boyle, "Trade and Agriculture of Denmark for the year 1904." *Dipl. and Cons. Reports*, No. 3,392, Ann. Ser., 1905 [Cd. 2236-136].

§ *Glückauf*, Vol. XXXIV., 1898, p. 872.

|| "Die Kohlen auf den Faröer." *B.u.h. Zeitung*, Vol. LX., 1901, p. 162.



## GREENLAND.\*

The quantity of cryolite obtained from Ivigtut was 2,215 tons in 1904 and 2,504 tons in 1905.

During the summer months 48 persons were employed in 1904, and 45 in 1905. These numbers were reduced during each winter by about 23 and 18 men respectively.

No fatal accidents occurred during the years 1904 and 1905.

## ICELAND.

*Coal.*—A bed of coal is said to have been discovered at Nordfjord, in Iceland.

*Iceland Spar.*†—About ten men are employed in the summer at a quarry on the east coast of the island for the purpose of getting transparent calcite for optical instruments. The best quality is worth £12 per kilogramme. The total value of the yield is about £280 yearly.

## Dutch East Indies.‡

Many of the Dutch Colonies in the East Indies contain valuable mineral deposits which are being worked on a large scale.

## BANCA.

The alluvial diggings of the Island of Banca still yield large quantities of tin ore, and the output is increasing.

TABLE 431.

Year.	Persons Employed.	Quantity of Metallic Tin produced.	
		Pikols.§	Metric Tons.
1904 ... ..	13,699	185,692	11,230
1905 ... ..	10,820	145,298	8,790

The number of persons in the table includes not only the actual diggers of the ore, but also the charcoal burners and the smelters.

## BILLITON.

Like Banca, its neighbour Billiton is a large producer of tin ore.

TABLE 432.

Year.	Average Number of Persons Employed.	Quantity of Metallic Tin produced.	
		Pikols.	Metric Tons.
1904 ... ..	8,702	72,673	4,395
1905 ... ..	10,091	67,386	4,076

## BORNEO.||

*Coal.*—The mines of Mahakkam River at Kutei in South-Eastern Borneo produced 3,064 metric tons of coal in 1904, and 2,790 tons in 1905, and those of Poeloe Laoet 16,860 tons in 1904 and 78,168 tons in 1905. Other mines in South-Eastern Borneo produced 1,018 metric tons in 1904, and 28,179 tons in 1905.

\* Official Report furnished by the Danish Government.

† *Mineral Mag.*, Vol. XIII., 1903, p. 396.

‡ Official Return furnished by the Colonial Department of the Dutch Government.

§ 1 Pikol = 133½ lbs. avoirdupois.

|| See also British North Borneo, p. 316.



DUTCH EAST INDIES—BORNEO—*continued.*

*Diamonds.*—The estimated output of diamonds from Western Borneo was 720 carats in 1904, and 710 carats in 1905. Profitable diamond diggings were discovered by chance in the Martapura district of Southern and Eastern Borneo.

*Gold.*—There are three well-marked auriferous districts in the island, viz., Sambas in Western Borneo, a second at the sources of the Kehajang and Kapuas rivers in Central Borneo, and a third in the south-eastern corner of the island.\*

The output of gold from the Western Division of Borneo was 774 thail, or 42 kilograms, in 1904, and 1,019 thail, or 55 kilograms, valued at fl. 80,000 or £6,666, in 1905. The gold diggers are mostly Chinamen.

*Petroleum.*†—Borneo is now a producer of mineral oil. The oil-field is situated in the Sultanate of Kutei, a Dutch protectorate on the East Coast of Borneo. The crude oil is either refined on the spot or shipped direct from Balek Pappan. Steamers are using the crude oil as fuel, and also the liquid residue from the petroleum refineries. In 1904 226,422 metric tons and in 1905, 354,239 metric tons of crude oil were produced.

## CELEBES.‡

*Coal* is obtained in Menado and on the West Coast.

*Gold.*—The precious metal has long been worked by the natives in the northern arm of the island, and within the last decade several European companies have been formed for the purpose of conducting operations on a larger scale. The output of fine gold in 1905 was 552 kilograms, of which the workings at Totoh produced 257 kilos, Palaleh 200, and Soemalata 95.

*Iron Ore* is worked in the eastern part, and copper, tin, and sulphur are known to exist in the island.

*Silver.*—206 kilograms of fine silver were also obtained at the places where gold was worked in 1905.

## JAVA.§

Among the mineral productions of Java may be named coal, gold, iodine, magnetic iron, manganese ore, and petroleum.

*Coal.*—A little coal has been worked in the Sedan district.

*Gold.*—The natives, especially the women, obtain some gold by washing river sand in wooden bowls. Several gold mining companies have been started with European capital, and rich gold ore is exported to Liverpool.

*Iodine.*—The output of crude iodide of copper was 16,800 kilograms in 1904, and 22,887 kilograms in 1905, containing 50 per cent. of iodide.

*Manganese.*—Manganese ore is produced in Djokjoharta. The output in 1905 was 1,600 tons.

*Magnetic Iron.*—A concession has been granted for the exploitation of beds of magnetic iron sand lying in the neighbourhood of Tjilatjap, on the South Coast of Java.

*Petroleum.*—Petroleum occurs in various parts of the island, and is obtained on a large scale by borings. The combined output of the wells was 98,471,298 litres or 91,550 metric tons of crude oil in 1904, and 128,447,415 litres or 119,485 metric tons of crude oil in 1905.

## SINGKEP.||

The small tin-producing island of Singkep forms a sort of connecting link between Banca and the Malay Peninsula.

\* Truscott, "The Mining and Occurrence of Gold in the Dutch East Indies." *Trans. Inst. M. and M.*, Vol. X., 1901, with map.

† *Petroleum*. Vol. I., London, 1900, p. 179.—*Shipping and Mercantile Gazette* and *Lloyd's List*, London, 22nd June, 1900; and Official Return furnished by the Colonial Department of the Dutch Government.

‡ Truscott, *op. cit.*, and Official Return.

§ Consul Davids, "Trade of Java for the Year 1901," *Dipl. and Cons. Reports*, No. 2,863, Ann. Ser., 1902 [Cd. 786-167], p. 9; Consul Fraser "Trade of Java for the year 1904," *Dipl. and Cons. Reports*, No. 3,403, Ann. Ser., 1905 [Cd. 2236-147], p. 11; and Official Return furnished by the Colonial Department of the Dutch Government.

|| Official Return furnished by the Colonial Department of the Dutch Government and *Jaarboek van het Mijnwezen in Nederlandsch Oost-Indië Dertigste Jaargang*, 1901, Batavia, 1901.



DUTCH EAST INDIES—*continued.*

TABLE 433.

Year.	Number of Mines at Work.	Number of Persons Employed.	Quantity of Metallic Tin produced.	
			Pikols.	Metric Tons.
1904 ... ..	15	1,380	6,007	364
1905 ... ..	16	1,512	7,488	453

About two-thirds of the persons were engaged at the tin diggings proper, and one-third in getting charcoal and smelting the ore.

## SUMATRA.\*

*Coal.*—The Dutch Government is working collieries in the Ombilien coalfield, which is now connected by rail with the port of Padang. One of the principal seams is 10 feet thick, and the other from 26 feet to 39 feet. The coal is said to be very free from ash.

*Gold.*—The gold-mining industry is progressing steadily. The principal workings are at Redjang Lebong and Kelahoen in the south-west part of the island, and they yielded 38,259 ozs. (1,190 kil.) of fine gold and 181,201 ozs. (5,636 kil.) of fine silver during the year 1904, and 53,209 ozs. (1,655 kil.) of fine gold and 181,201 ozs. (7,500 kil.) of fine silver in 1905.

*Petroleum.*—Sumatra's principal petroleum wells are on the east coast at Langkat and Palembang; the former yielded 150,943,980 litres of crude petroleum in 1905, and the latter 181,223,000 litres, whilst the rest of Sumatra yielded 300,468,800 litres, making a total output of 632,635,700 litres, or 588,500 metric tons of crude oil as against a total output of 637,985 metric tons in 1904. The oil is exported to the Straits Settlements, Burmah, Siam, Cochin China, and elsewhere.

TABLE 434.

NUMBER OF PERSONS EMPLOYED and QUANTITY OF COAL PRODUCED at COAL MINES in 1904 and 1905.

Year.	Number of Persons Employed.	Quantity of Coal produced.
		Metric Tons.
1904 ... ..	3,814	207,280
1905 ... ..	3,120	221,416

## Dutch Guiana or Surinam.†

Mining in Dutch Guiana is confined almost entirely to the working of alluvial gold deposits in the Surinam, Lawa, Saramaca and Maroni districts.‡ Up to the present the gold industry has been unable to make much progress, owing principally to difficulties of transport, but, perhaps, also to lack of gold, as the reports of the Government Mining Engineers are not favourable. The railway, which was commenced in 1904, reached the nearest point of the goldfields at the end of 1906.

The quantity of gold produced was 802 kilograms, valued at fl. 1,098,574, or £91,548, in 1904, and 1,023 kilograms, valued at fl. 1,402,176, or £116,848, in 1905.

\* Official Return furnished by the Colonial Department of the Dutch Government and *Jaarboek van het Mijnwezen in Nederlandsch Oost-Indië* Dertigste Jaargang, 1901. Batavia, 1901; and Consul Fraser, *op. cit.*, No. 3,403 [Cd. 2236-147], 1905.

† Official Return furnished by the Colonial Department of the Dutch Government; and Consul Piggott, "Trade and Agriculture of Surinam, Dutch Guiana, for the year 1905," *Dipl. and Cons. Reports*, No. 3,670, Ann. Ser., 1906 [Cd. 2682-195].

‡ Report received by Foreign Office from Consul Piggott, Paramaribo, February, 1905.



## Dutch West Indies.\*

## ARUBA.

Gold mining is being carried on successfully by an English company; all the gold obtained is sent to England. 98 kilograms of gold, valued at fl. 133,318, or £11,110, were shipped in 1904, and 123 kilograms, valued at fl. 201,211, or £16,768, in 1905.

Phosphate of lime was quarried with great profit between the years 1884 and 1892; in spite of lower prices the deposits are still being worked, and the quantity exported in 1904 was 22,764 tons (36,810 cubic metres), and in 1905, 22,940 tons (37,834 cubic metres); a considerable portion of the quantity shipped is consigned to Great Britain and Belgium. Mines of rock phosphate have been discovered in Fuik, and are being explored by an American company.

## BONAIRE, AND ST. MARTIN.

Salt is obtained by the natural evaporation of sea water at both these islands. In 1904 the export of salt from Bonaire was 98,304 hectolitres, valued at fl. 47,185, or £3,932, and in 1905, 73,558 hectolitres, valued at fl. 35,308, or £2,942. From St. Martin in 1904 the export was 8,527 hectolitres, valued at fl. 2,922, or £243, and in 1905 58,489 hectolitres, valued at fl. 28,062, or £2,339.

## CURAÇAO.

The phosphate of lime mines in this island have been at a standstill since 1895. In 1904, 9,896 metric tons of salt, valued at fl. 46,840, or £3,903, and in 1905, 5,179 metric tons, valued at fl. 26,006, or £2,167, were exported from Curaçao to the United States and Porto Rico.

## SABA.

The sulphur deposits are no longer worked.

## Ecuador.†

A large expenditure of foreign capital in mining enterprises in and around the Esmeraldas province has not given any practical result during the period 1899 to 1905.

It is said that gold abounds, though the yearly output is small. It is obtained mainly from alluvial deposits. The Zaruma mines are being worked by the South American Development Company, and the produce is exported in gold bars and cyanide slimes (containing gold, silver, copper, &c.) to San Francisco for treatment. In 1905 the value of the gold and slimes shipped was £35,500.

There are also deposits of anthracite, copper ore, petroleum, salt, and silver ore.‡

It is not surprising that one article of commerce of a country possessing active volcanoes should be pumice stone. It is cut up for sale into lumps like bricks.

TABLE 435.

QUANTITY and VALUE of GOLD and SILVER produced during the years 1903 and 1904.§

Mineral.	1903.		1904.	
	Quantity.	Value.	Quantity.	Value.
Gold (fine) ... ..	Kilos. 413	£ 56,345	Kilos. 200	£ 27,290
Silver (fine) ... ..	Kilos. 1,244	4,390¶	Not stated.	—

\* Official Return furnished by the Colonial Department of the Dutch Government, and Consul Jesurun, "Trade of Curaçao for the year 1905," *Dipl. and Cons. Reports*, No. 3,603, Ann. Ser., 1906 [Cd. 2682-128], 1906.

† Consul Soderström, "Trade of Quito for the year 1897," *Dipl. and Cons. Reports*, No. 2,101, Ann. Ser., 1898 [C. 8648-123].  
— Consul Chambers, "Trade of Guayaquil for the year 1898," *Dipl. and Cons. Reports*, No. 2,246, Ann. Ser., 1899 [C. 9044-72],  
and Consul Cartwright, "Trade of Ecuador for the years 1899-1905," *Dipl. and Cons. Reports*, No. 3,685, Ann. Ser., 1906 [Cd. 2682-210].

‡ *Mining Journal*, Vol. LXX., 1900, p. 620.

§ *Report of the Director of the United States Mint for the year ended June, 1905*, Washington, 1905.

|| The Mineral Industry for 1903, Vol. XII. New York, 1904.

¶ Commercial value of fine silver.



## Egypt.\*

A Department of Mines has been organised and a Report on the Mining Industry in Egypt for the year 1905 has been published.†

The number of natives employed at the mining camps varied between 1,169 and 1,540.

The Inspector-General expresses the opinion that the extent and distribution of the various mineral belts in Egypt are such as to warrant the expenditure of capital in their development.

*Clays.*—Pottery clays are worked at Bulak, Tebbani, Aswan, and Korosko, and shales between Esna and Qena; and a concession has been granted for working kaolin at Aswan.

*Coal.*—Boring operations for coal made at Redesia, near Edfu, were carried to a depth of 400 metres and then abandoned, no coal having been found. Thin seams of lignite have recently been discovered in Kharga Oasis, and are also reported from Dakhla, but similar thin seams are known to occur in several localities in Egypt.

*Copper.*—The working for copper at Wadi Samarah in eastern Sinai has been discontinued owing to expense of development.

*Gems.*—The turquoise mines at Wady Maghara in the peninsula of Sinai are no longer being worked, except by the local Arabs. Crystals of peridot are obtained on an island in the Red Sea, south of Qosseir. Work is proceeding on one of the emerald mines at Sikait.

*Gold.*—The Um Garairat, Um Rus, Eridia, Attola, Harmur, and Nile Valley block E mines, all situated in the south eastern desert of Egypt, are being actively developed. Those of Um Garairat and Um Rus are at present the most important, and at the latter crushing for gold commenced on the 6th March, 1905.‡ The total returns of gold from the Nile Valley and Um Rus Companies amounted to £41,000 in 1905. Very extensive ancient workings for gold have been located in the neighbourhood of Jebel Zeit.

*Gypsum.*—This mineral is of great commercial importance in Egypt, being obtained in large quantities from the deposits near Helwan and Alexandria. Concessions have been granted to work the deposits near Cairo in the Fayum province and North of Ismalia.

*Petroleum.*—The boring for mineral oil at Jebel Zeit on the west shore of the Gulf of Suez has ceased, the oil not having been obtained in paying quantity. Negotiations are being conducted with a view to further borings being made in the neighbourhood.

*Phosphate of Lime.*§—Large deposits of phosphate of lime have been discovered in Dakhla Oasis in the Nile Valley neighbourhood between Qena and Edfu, and in the Red Sea hills west of Qosseir, &c., in rocks of Cretaceous age, and a company is now working those in the Nile Valley. The deposits near Qosseir have been traced for a distance of 40 miles.

*Salt.*||—The natural evaporation of the waters of Lake Mareotis leaves a considerable quantity of salt, and this source of supply is still utilized, although a large portion of the salt produced by the Egyptian Salt and Soda Company is now obtained from Wady Natron. Some large salt pans constructed near Port Said for the purpose of making salt from sea water have apparently not proved a commercial success. The Government salt monopoly was abolished on 1st January, 1906, but the above-named Company have retained the right to work their salines. The abolition of the monopoly has caused considerable competition in the sale of salt in Egypt, especially in connection with the large salt deposits operated at Port Said. The Port Said Salt Association exported 36,000 tons of salt to India in 1905.

*Soda.*||—The Egyptian Salt and Soda Company, Ltd., has acquired the concession of the natural alkali deposits of Wady Natron from the Société Anonyme des Soudes Naturelles d'Egypte, who held it direct from the Government, but it has not been worked on a large scale. A considerable amount of caustic soda is made by the Company at Wady Natron, and utilised at its cotton seed crushing and soda and oil factory at Kafr Zayat, on the Nile. Small quantities of the crude natron are sold to the natives.

\* Information furnished by the Director-General of the Survey Department, Cairo, and "Reports by His Majesty's Agent and Consul-General on the Finances, Administration and Condition of Egypt and the Soudan in 1905." Egypt, No. 1 (1906) [Cd. 2817] 1906.

† *Op. cit.*, Egypt, No. 1 (1906) [Cd. 2817], p. 105.

‡ Fifth Annual Report of the Egyptian Mines Exploration Co., Ltd., London, 1906.

§ "A Report on the Phosphate deposits of Egypt." *Geological Survey. Public Works Ministry*, Cairo, 1900.

|| Information furnished by the Egyptian Salt and Soda Company, London.



EGYPT—continued.

*Stone.*—Sandstone and limestone are extensively quarried. Granite is obtained at Aswan, and basalt from quarries at Abu Zabel, near Cairo.

Regulations have been made for the proper control of all operations in connection with the mines.

SOUDAN.\*

The possible mineral wealth of the Soudan is practically unknown. Gold mines were once worked in the mountains south of Fazogl. Iron ore is found in Bahr-el-Ghazal Province and also in Darfur. Prospecting expeditions and mining operations were carried on in 1905, but no mine has reached the producing stage.

Faroe Islands (see DENMARK).

Eritrea.†

Gold mines are being worked in this Colony by an Anglo-Italian Company. Salt is obtained by the evaporation of sea water, and also from the waters of Lake Assal, about 37 miles north-west of Gibuti.

Formosa.‡

The Island of Formosa contains deposits of coal, gold, sulphur, and petroleum.

*Coal.*—In 1901 there were 73 collieries in the Kelung district, with a total output of 65,689 tons, valued at £25,332. The exports from Tamsui and Kelung were 30,002 tons, valued at £13,394 in 1904, and 39,072 tons, valued at £16,836 in 1905.

*Gold.*—There are three gold mines at work in the Kelung district of Formosa, viz., at Kyufun, Kinkwaseki, and Botanko respectively, and the total number of persons employed in 1905 was 2,550. Gold in fair quantity is likewise obtained by washing the banks and bed of the Kelung river. The total quantity of gold obtained in 1905 from the gold mines and from gold washing was 66,177 ozs. valued at £212,829, or 12,709 ozs. more than in 1904.

*Salt.*—The export is a Government monopoly. The quantity exported was 29,714 tons valued at £72,901 in 1904, and 22,411 tons valued at £10,491 in 1905; the decreased output in 1905 is largely attributed to a bad harvest, owing to the prevalence of much rain during the manufacturing season. The whole of the quantity obtained was sent to Japan.

*Sulphur.*—If improved machinery were introduced the output of sulphur could be considerably increased. The quantity exported from Tamsui and Kelung was 2,088 tons valued at £6,716 in 1904, and 2,794 tons valued at £9,017 in 1905.

France.§

*Antimony.*—Sulphide of antimony is worked in five departments on the mainland and also in Corsica. The principal workings are in Departments of Mayenne, Haute-Loire, and Cantal.

\* Despatch from H.M. Agent and Consul-General at Cairo, enclosing a Report on the Soudan by Sir W. Garstin, K.C.M.G.—Egypt, No. 5 (1899) [C. 9332], and *Op. cit.*, Egypt, No. 1 (1906), p. 130.

† Information furnished by the Chief Inspector of Mines, Rome.

‡ Consul Layard, "Trade of North Formosa for the Year 1902," *Dipl. and Cons. Reports*, No. 3,054, Ann. Ser. [Cd. 1,386-131], 1903, pp. 14, 15; Acting-Consul Griffiths, "Trade of South Formosa for the Year 1903," *Dipl. and Cons. Reports*, No. 3,276 Ann. Ser. [Cd. 2236-20], 1904, p. 13; Acting-Consul Crowe, "Trade of North Formosa for the Year 1905," *Dipl. and Cons. Reports*, No. 3,646, Ann. Ser., 1906 [Cd. 2682-171]; "Gold Mines of Formosa," *Dipl. and Cons. Reports*, No. 649, Misc. Ser. [Cd. 2683-13], and Consul Wileman "Trade of the Consular District of Tainan (South Formosa) for the year 1905," *Dipl. and Cons. Reports*, No. 3,706, Ann. Ser., 1906 [Cd. 2682-231].

§ *Statistique de l'Industrie Minérale et des Appareils à Vapeur en France et en Algérie pour l'année 1905*, Paris, 1906, and information furnished by the French Government.



## FRANCE—continued.

*Arsenic.*—Most of the arsenic is produced at the two mines of Villanière and Salsigne (Aude).

*Bauxite.*—Southern France possesses rich mines of bauxite; the most important workings are in the Department of the Var.

*Coal.*—The extraction of fossil fuel is the most important mining industry in France, for nearly 91 per cent. of the persons employed in and about mines in 1905 were workers at collieries. The output, including anthracite, amounted in 1905 to nearly 36 million metric tons, or  $1\frac{3}{4}$  million tons more than in the preceding year. The value of the production exceeded 89 per cent. of the value of the total output of all the mines.

The two great coal-producing departments are the Pas-de-Calais and the Nord. The former yielded nearly 17 million metric tons, and the latter over 6 million; the two departments together produced more than 23 million metric tons, or 84.5 per cent. of the total output of the country. Next in importance is the Loire Basin with nearly 3.7 million metric tons. Several trials have been made to find coal in the Department of Somme, but without success.\* Near Peronne the borings were made to a depth of 390 yards.

It is reported that new coalfields have been discovered in the neighbourhood of La Mure, in the Department of Rhône, and are about to be worked.†

The total quantity of brown coal produced during the year 1905 amounted to 709,467 metric tons, or an increase of 43,895 tons compared with the previous year.

The Department of the Somme is the principal seat of the peat industry; the production in 1905 was 29,000 tons, or 5,000 tons less than the previous year. It is stated by Consul Payton in his report\* that in a few years the fields will be exhausted.

The Central Committee of French Coal Mines, in its year book for 1906,‡ publishes much valuable information concerning the mines, together with a reprint of the laws affecting mines and mining.

*Copper ore.*—This mineral is worked in the Departments of Ariège, Savoie, Var, Aude and Corsica.

*Gold Ore.*—Auriferous quartz was obtained in 1905 from Lucette Mine in the Department of Mayenne. 75 tons of rich ore treated contained 1,000 grains of gold per ton.

*Iron ore.*—There are three main iron ore districts: (1) the North-east, or Meurthe-et-Moselle, which yields over 6 million metric tons out of a total of  $7\frac{1}{2}$  millions; (2) the Pyrenees, which give nearly  $\frac{1}{4}$  million tons; and (3) Normandy, with an output of 204,168 metric tons. Iron mining in Normandy is an industry of comparatively recent date. Its geographical position enables it to supply ore for export, whilst the other iron districts furnish ore for home consumption.

*Iron pyrites.*—Nearly all the iron pyrites is the produce of the Sain-Bel mines (Rhône).

*Lead ore.*—The principal lead mines are situated in the Departments of Ardeche, Gard, Lozère, and Tarn.

*Manganese ore.*—Las Cabesses mine (Ariège), which produced carbonate of manganese, was not worked in 1904. Pyrolusite is obtained at the Romanèche and Grand-Filon mines (Saône-et-Loire). The output at these latter mines was 6,061 metric tons in 1905, as against 10,453 in the preceding year.

*Phosphate of Lime.*—This mineral is worked in 20 departments; the Somme again heads the list with an output of 255,000 tons in 1905.

*Salt.*—Much of the salt comes from a thick bed of rock salt in the Upper Trias in the department of Meurthe-et-Moselle. The bay-salt is the result of the evaporation of sea-water in marshes on the shores of the Atlantic and the Mediterranean.

*Stone, &c.*—France produces very large quantities of useful stones, &c., employed for building purposes, in various manufactures, in agriculture, for paving and road making,

\* Consul Payton, "Trade of Consular District of Calais for the year 1905." *Dipl. and Cons. Reports*, No. 3567, Ann. Ser. [Cd. 2682-92], 1906, p. 31.

† Consul Liddell. "Trade of Lyons, St. Etienne and Grenoble for the year 1904." *Dipl. and Cons. Reports*, No. 3409, Ann. Ser. [Cd. 2236-153], 1905.

‡ *Comité Central des Houillères de France. Annuaire, 1906. Paris, 1906.*

## FRANCE—continued.

and for ornamental purposes. Details concerning them are contained in the French Statistical Volume.

*Zinc ore.*—The two largest workings for zinc are those of Malines (Gard) and Bormettes (Var).

*Tin ore.*—The tin ore in 1904 was produced from Montebbras mine (Creuse), but in 1905 none was obtained.

TABLE 436.

PERSONS EMPLOYED at MINES, classified according to Ages, during the Years 1904 and 1905.\*

## 1904.

Kind of Mines.	Under-ground.				Above-ground.					Total Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	6,774	7,252	109,175	123,201	4,214	2,186	6,056	36,135	48,591	171,792
Other mines ... ..	64	191	11,984	12,239	234	272	364	4,396	5,266	17,505
Total ... ..	6,838	7,443	121,159	135,440	4,448	2,458	6,420	40,531	53,857	189,297

## 1905.

Kind of Mines.	Under-ground.				Above-ground.					Total Under-ground and Above-ground.
	Males under 16.	Males 16-18.	Males above 18.	Total.	Children under 16.	Young Persons 16-18.	Females above 18.	Males above 18.	Total.	
Anthracite, brown coal, and coal.	7,486	7,164	112,304	126,954	3,985	1,974	6,400	35,791	48,150	175,104
Other mines ... ..	51	182	12,785	13,018	168	240	419	4,416	5,243	18,261
Total ... ..	7,537	7,346	125,089	139,972	4,153	2,214	6,819	40,207	53,393	193,365

TABLE 437.

PERSONS EMPLOYED at QUARRIES during the Years 1904 and 1905.\*

Kind of Quarries.	1904.			1905.		
	Under-ground.	Above-ground.	Total.	Under-ground.	Above-ground.	Total.
Underground ... ..	14,519	10,005	24,524	14,142	9,554	23,696
Open ... ..	—	108,535	108,535	—	103,669	103,669
Total ... ..	14,519	118,540	133,059	14,142	113,223	127,365

\* Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1904 and pour l'année 1905.



## FRANCE—continued.

TABLE 438.

QUANTITY and VALUE of the MINERALS raised from MINES and WORKINGS other than QUARRIES during the Years 1904 and 1905.\*

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony ore ... ..	9,065	587,773	12,543	1,038,242
Arsenic ... ..	3,117	139,456	3,627	110,659
Bituminous shale, limestone, &c. ...	227,177	1,654,914	191,509	1,671,324
Brown coal ... ..	665,572	6,305,845	709,467	6,532,649
Coal (including Anthracite) ... ..	33,502,394	448,123,643	35,218,237	457,519,485
Copper ore ... ..	2,756	165,600	5,068	298,053
Gold quartz ... ..	—	—	6,759	253,945
Graphite ... ..	15	675	100	7,000
Iron ore... ..	7,022,841	26,904,248	7,395,409	28,287,464
Iron pyrites ... ..	271,544	3,954,545	267,114	3,881,074
Lead ore, argentiferous ... ..	14,173	2,280,027	12,118	2,517,818
Manganese ore ... ..	11,254	283,134	6,751	200,314
Peat ... ..	95,716	1,209,663	98,517	1,187,937
Salt {	Rock salt and salt from brine	304,594	7,604,873	344,864
	Salt contained in brine used for making soda.	336,804	2,189,226	325,000
	Salt from sea water ... ..	512,356	8,806,082	450,224
Sulphur-bearing limestone ... ..	5,447	86,440	4,637	72,834
Tin ore ... ..	11	18,955	—	—
Wolfram ore ... ..	—	—	25	59,315
Zinc ore ... ..	52,842	4,921,904	62,150	6,980,902
Total value in Francs ... ..	—	515,237,003	—	528,673,362
„ £ sterling .. ..	—	£20,609,480	—	£21,146,934

TABLE 439.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1904 and 1905.\*

Mineral.	1904.		1905.		
	Quantity.	Value.	Quantity.	Value.	
	Metric Tons.	Francs.	Metric Tons.	Francs.	
Aluminous earth ... ..	5,206	48,020	8,111	81,600	
Amethyst .. ...	45	31,500	50	35,000	
Barytes ... ..	6,944	79,301	5,504	72,856	
Bauxite ... ..	75,640	679,945	103,207	1,066,070	
Cement ... ..	903,632	22,350,492	922,531	24,024,600	
Chalk ... ..	46,062	625,050	44,832	619,050	
Clay {	China clay ... ..	56,640	1,462,108	61,445	1,444,426
	Fireclay ... ..	220,409	1,539,705	215,587	1,495,307
	Potter's clay ... ..	4,968,936	7,043,502	5,067,628	7,096,858
	White clay for Stucco ... ..	350	18,550	320	16,000
Flagstone ... ..	54,472	1,220,666	53,824	1,221,313	
Fluor spar ... ..	2,047	26,520	2,434	32,400	
Gypsum {	Plaster ... ..	1,481,303	14,416,260	1,283,313	12,144,784
	Manure ... ..	106,173	695,052	92,832	709,688
Lignite (Pyritiferous) ... ..	9,070	40,815	9,100	40,950	
Lime ... ..	4,583,522	44,074,220	4,424,934	42,674,225	
Lithographic stone ... ..	532	35,600	580	48,000	
Marble ... ..	118,654	1,553,891	115,222	1,335,255	
Marl ... ..	1,123,059	1,520,774	1,178,724	1,620,111	

\* Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1904, and pour l'année 1905.

FRANCE—continued.

TABLE 439—continued.

QUANTITY and VALUE of MINERALS raised from QUARRIES in 1904 and 1905\*—continued.

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Millstones ... ..	37,409	1,709,405	33,468	1,773,596
Ochre ... ..	34,945	3,311,875	37,800	3,393,800
Onyx ... ..	1,780	61,765	720	79,800
Paving stone ... ..	568,943	9,010,792	608,258	10,985,419
Phosphate of lime ... ..	423,521	9,895,642	476,720	10,845,173
Sand, gravel, and flint ... ..	4,873,971	8,745,997	5,140,457	8,836,029
Slate {	Roofing ... ..	382,435	25,038,217	418,793
	Slabs ... ..	2,136	316,674	1,435
Steatite, talc, and asbestos ... ..	21,052	666,795	23,547	711,680
Stone for building ... ..	10,515,909	45,054,649	10,152,679	46,395,763
„ (broken for ballast) ... ..	12,838,650	26,537,881	12,914,968	26,550,813
„ for mosaic work ... ..	2,000	50,000	1,632	44,100
Whetstones ... ..	710	63,200	775	71,825
Total value in Francs ... ..	—	227,924,363	—	228,071,352
„ £ sterling ... ..	—	£9,116,974	—	£9,122,854

TABLE 440.

DEATHS from ACCIDENTS at MINES during the Years 1904 and 1905.\*

Kind of Mines.	1904.						1905.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Anthracite, brown coal, and coke.	153	31	184	1·24	·64	1·07	147	35	182	1·16	·73	1·04
Other Mines ...	36	5	41	2·94	·95	2·34	22	6	28	1·69	1·14	1·53
Totals ...	189	36	225	1·39	·67	1·19	169	41	210	1·21	·77	1·09

TABLE 441.

DEATHS from ACCIDENTS at QUARRIES during the Years 1904 and 1905.\*

Kind of Quarries.	1904.						1905.					
	Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.			Number of Deaths from Accidents.			Death-rates from Accidents per 1,000 Persons Employed.		
	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.	Below-ground.	Above-ground.	Total.
Underground ...	40	1	41	2·75	·10	1·67	55	2	57	3·89	·21	2·41
Open ... ..	—	112	112	—	1·03	1·03	—	93	93	—	·90	·90
Total ...	40	113	153	2·75	·95	1·15	55	95	150	3·89	·84	1·18

\* Statistique de l'Industrie Minière en France et en Algérie, pour l'année 1904, and pour l'année 1905.



## FRANCE—continued.

The following figures show that the death-rate from accidents at coal mines in France in 1905 per 1,000 persons employed below ground is the lowest since 1896 :—

1896	...	...	1.62 per 1,000.	1901	...	...	1.40 per 1,000.
1897	...	...	1.34 "	1902	...	...	1.27 "
1898	...	...	1.26 "	1903	...	...	1.19 "
1899	...	...	1.62 "	1904	...	...	1.24 "
1900	...	...	1.62 "	1905	...	...	1.16 "

On the 2nd July, 1905, a law relating to the hours of labour of coal miners in France was promulgated in the "Journal Officiel."

Article 1 provides that six months after the promulgation of the present law the working day of miners employed in coal-hewing must not exceed nine hours, calculated from the entry into the pit of the last batch of men to the arrival above-ground of the first batch. In mines where the entrance is by galleries the duration is calculated from the arrival at the end of the gallery of access to the return at the same point.

At the end of two years from the date above prescribed the day's work is to be reduced to 8½ hours, and at the end of a further period of two years to eight hours.

## French Congo.\*

2,000 tons of copper ore valued at 600,000 francs (£24,000) were obtained from the Mindouli Mine in the Louconni district in 1905. The number of men employed was 124. The exportation of ore cannot commence until the projected railway is made.

## French Guiana.†

Gold mining is the only mineral industry of any importance in the French Colony. The districts where alluvial mining is principally carried on are Maroni and Mana. There is only one quartz mine successfully working at the present time, viz., that belonging to the Société Anonyme of St. Elie, situated in the Sinnamary district.

An attempt has been made at gold dredging, but the results so far have not been very satisfactory.

In 1903, 7,769 tons of phosphate of lime, valued at 311,000 francs (£12,440), were exported.

Prospecting for diamonds is being undertaken by a local syndicate.

The output of gold in 1905 was 3,568 kilos., or an increase of 131 kilos. compared with the previous year.

TABLE 442.

QUANTITY of GOLD produced in 1904 and 1905.

1904.		1905.	
Gold.		Gold.	
Quantity.	Value.	Quantity.	Value.
Kilos. 3,437	{ Francs 9,280,000 £ sterling 371,200	Kilos. 3,568	{ Francs 9,636,000 £ sterling 385,440

\* Leygues, "Statistiques Coloniales pour l'année, 1905," published by the French Colonial Office, Melun, 1906, p. 39.

† *Statistique de l'Industrie Minérale en France et en Algérie pour l'année, 1903, and pour l'année, 1904*; Acting Vice-Consul Fourrage, "Trade of French Guiana for 1902." *Dipl. and Cons. Reports*, No. 5106, Ann. Ser. [Cd. 1766-40], London, 1903, pp. 4-6; *Annuaire Statistique*, Vol. 24, 1904, Paris, 1905, p. 371; and information furnished by Consul Piggott to the Foreign Office in February, 1905.



**French Possessions** (*See* ALGERIA, FRENCH CONGO, FRENCH GUIANA, FRENCH WEST AFRICA, INDO-CHINA, MADAGASCAR, NEW CALEDONIA, and TUNIS).

**French West Africa.**

**IVORY COAST.\***

The Vice-Consul reports that although the mining industry in 1904 was not quite so flourishing as in the preceding year, the development of the gold mines of the Ivory Coast is progressing satisfactorily, particularly in the Sanwi and Indeni districts of the eastern portion of the Colony. The gold is obtained from quartz reefs and from detrital deposits. The quantity of gold obtained and exported in 1905 was 22 kilograms valued at 66,600 francs (£2,664). The number of men employed in gold mining at the Akriez Mine in the Sanwi district during the year was 154. Fossil gum opal is fairly abundant near Thiassalé and other places.

**SENEGAL.†**

Alluvial deposits of gold exist in various parts of Senegal, and especially in the valley of the Falemé river, where the metal is extracted on a small scale by the natives. In 1904, the value of the gold exported was £27,499, but none in 1905.

**SAHARA.‡**

There are three important salt deposits in the Sahara, all of which are due to the natural evaporation of salt lakes, viz., the Sebka d'Idgil, which supplies Western Africa; the Taodeni bed, which furnishes salt to the Sahel, the Niger district, and the Congo; and lastly, the Sebka de Bilma, which sends its produce to the east and the region of Lake Tchad.

**German East Africa.§**

The Consular Report for 1903-04 stated that there was little progress to record in mining within this Protectorate; the number of prospecting licences issued having decreased. The total value of the mineral (including gold) exported in the year amounted to £1,017.

*Coal.*—There is a large coal bed in Songwe at the north end of Lake Nyassa; it is not worked, as wood is at present a cheaper fuel for the steamers.

*Gems.*—Garnets are plentiful and £2,750 worth were exported in 1900-01.

*Gold.*—Some prospecting has been done in the Irambi and Muanza districts; in the latter gold-bearing quartz veins have been discovered. The value of the gold exported in 1904 was £608.

*Salt.*—Brine springs at Mlagarassi, Lake Nyassa, produce good salt.

**German Empire.**

The following tables relating to the mining industry of the German empire show that in 1905 its mines employed 655,032 persons, and produced nearly 174 million metric tons of coal and brown coal, and over 16½ million tons of iron ore, besides other minerals. The progress of mining during the last 34 years is shown by the fact that in 1871 the total value of minerals raised was rather more than £15,000,000 sterling, and in 1905 it reached £70,225,400 sterling. This rise is largely due to the increased output of coal.

*Amber.*||—The shores of the Baltic have been the principal amber-yielding region of the world for many centuries. The industry in 1905 is reported to have been in a very

\* Acting Consul Mackie, "Trade of Senegal and Dependencies for the year 1902." *Dipl. and Cons. Reports*, No. 3089, Ann. Ser., 1903 [Cd. 1766-23], pp. 23-25; Vice-Consul Armstrong, "Trade of the Ivory Coast for the year 1904." *Dipl. and Cons. Reports*, No. 3513, Ann. Ser., 1905 [Cd. 2682-38], p. 11; and *op. cit.*, Leygues, p. 33.

† Consul-General Cromie, "Trade of Senegal for the year 1903." *Dipl. and Cons. Reports*, No. 3312, Ann. Ser., 1904 [Cd. 2236-56], 1905; for the years 1904-5, No. 3543, Ann. Ser., 1906 [Cd. 2682-68], p. 20; and *op. cit.*, Leygues, p. 33.

‡ Dastre, "Le Sel," *Revue des Deux Mondes*, Vol. LXXI., 1901, p. 219.

§ Vice-Consul Dundas, "Report on German East Africa for the year 1901." *Dipl. and Cons. Reports*, No. 2819, Ann. Ser. [Cd. 786-123], London, 1902; Buchanan, "German Colonies for the year 1901-2." *Dipl. and Cons. Reports*, No. 2983, Ann. Ser. [Cd. 1336-60], 1903; Whitehead, "German Colonies for the year 1902-3." *Dipl. and Cons. Reports*, No. 3296, Ann. Ser. [Cd. 2236-40], 1904; and Whitehead, *op. cit.*, for 1903-04, No. 3519 [Cd. 2682-44], 1905. Later information not obtainable.

|| Dahms "Vorkommen und Verwendung des Bernsteins." *Zeitschr. f. p. Geologie*, Vol. IX., 1901, p. 201, and Consul Brookfield, "Trade of the Consular District of Dantzic for the Year 1905." *Dipl. and Cons. Reports*, No. 3694, Ann. Ser. [Cd. 2682-219], 1906.



## GERMAN EMPIRE—continued.

flourishing state, the demand for amber having exceeded the supply. About 200 tons were exported from Königsberg during the year.

*Brown Coal.\**—Deposits of brown coal are found in more or less abundance over nearly the whole of North Germany, but the principal brown coalfields are situated in Central Northern Germany, lying between Halle and Magdeburg in a direction from north to south, and between Brunswick and Frankfort on the Oder in a direction from west to east, and branching into the Kingdom of Saxony and also Lausitz. Another important brown coal deposit is that of "Vorgebirge," near Cologne, in the Rhine province, which differs from that of Central Germany in that it consists of a large continuous bed extending about 25 kilometres (15½ miles) from north to south with an average width of 6 kilometres (3¾ miles). The estimated quantity of brown coal available in the Rhenish district is stated to be about 3,500,000,000 tons. The manufacture of briquettes and other patent fuel, which amounted to 13,009,682 tons in 1905, is of great value to the brown coal industry.

*Coal.*—There are three principal coal-mining districts in Prussia: (1) The Lower Rhine and Westphalian Basin, which is by far the most important; (2) Silesia, and especially Upper Silesia; (3) the Rhenish district in the neighbourhood of Saarbrücken and Aix-la-Chapelle. Most of the coal is derived from seams of true Carboniferous age; near Hanover there are extensive workings in the Wealden beds.

The figures in Table 445 show that the output of coal in 1905 reached 121,298,607 metric tons, or an increase of not quite half a million tons compared with that of 1904. The smallness of the increase was doubtless due to the strike in Westphalia, which happened early in 1905.

The exports of coal from Germany amounted to 18,177,000 metric tons, and of coke to 2,761,000 tons in 1905.†

*Copper.*—The bulk of the copper is obtained by the large and important Mansfeld Company from a thin bed of cupriferous shale, which at the same time is silver-bearing.

*Iron Ore.*—Veins in the Siegen district and in the Duchy of Nassau yield spathose ore, brown iron ore, and hæmatite rich in manganese. These sources of supply are, however, of far less importance than the stratified ore of Jurassic age in Luxemburg and Lorraine. Indeed, the iron-field upon the confines of France and Germany is at the present moment the greatest ore-producer of Europe. It is estimated that Luxemburg possesses 14 sq. m. (37 sq. km.), Germany 160 sq. m. (414 sq. km.), and France 208 sq. m. (540 sq. km.) of iron territory, in which ore can be raised at a profit. The so-called "iron-ore formation" consists of five main beds of oolitic iron ore interstratified with marl and limestone, with an average thickness of 105 ft. (32 m.), of which rather more than one-half is available iron ore. The iron ore deposits of German Lorraine, which under the present working system would be worth mining, are estimated on the Plateau Aumetz-Arsweiler at 1,125 million tons; in the Fentsch-Orne district at 389 million tons, and in the district south of the Orne at 321 million tons, or a total of 1,835 million tons, and those of Luxemburg are estimated at 300 million tons. The ore contains on an average 36 per cent. of iron and 1·7 per cent of phosphoric acid.‡ The output of Lorraine is at present handicapped by excessive cost of transport, but great hopes of the further development of the ore production in this district are entertained in connection with the proposed Mosel Canal, which would constitute a waterway from the ore deposits to the Rhenish-Westphalian industrial districts.

In 1905 the output increased by 1,148,591 metric tons, or about 7 per cent. on that of the previous year.

*Lead Ore.*—The lead ore comes chiefly from Upper Silesia, the Hartz, and Rhenish Prussia.

*Salts.*—In no country in the world is there such an abundance of potassium salts as in Germany. They are mined in the province of Prussian Saxony and the Duchy of Anhalt; of late years Hanover has had a share in the production of these important and not very widely spread minerals. Common salt and potassium chloride are likewise obtained in considerable quantities by evaporation of solutions pumped up from boreholes.

*Zinc Ore.*—Upper Silesia is the mainstay of the German zinc industry.

\* Report to the Foreign Office by Consul Niessen, of Cologne, on the Brown Coal Industry, dated 4th March, 1905.

† Consul-General Schwabach, "Trade of Germany for the year 1905." *Dipl. and Cons. Reports*, No. 3544 and 3656, Ann. Ser. [Cd. 2682-69], 1906. Consul-General Oppenheimer "Trade of Germany for the year 1905." *Dipl. and Cons. Reports*, No. 3656, Ann. Ser. [Cd. 2682-181], 1906, and *Vierteljahrshefte zur Statistik des Deutschen Reichs*, Jahrgang, 1906, Berlin IV. Heft.

‡ Hofmann

mmen der oolithischen Eisenerze (Minette) in Luxemburg und Lothringen." *Geol. Schauf.*

Vol. XXXV., 1

† Oppenheimer, *op. cit.*, p. 39.

## GERMAN EMPIRE—continued.

TABLE 443.

## PERSONS EMPLOYED at the MINES of the GERMAN EMPIRE.

Mineral.	1904.*				1905.†			
	Under-ground.	Above-ground.		Total Under and Above Ground.	Under-ground.	Above-ground.		Total Under and Above Ground.
		Males.	Females.			Males.	Females.	
I.—Coals and Asphalt.								
Asphalt ... ..	146	133	—	279	151	152	—	303
Brown coal ... ..	22,505	29,214	1,156	52,875	22,931	30,828	1,210	54,969
Coal... ..	371,588	113,521	5,495	490,604	372,648	115,036	5,624	493,308
Graphite ... ..	166	76	—	242	200	98	—	293
Petroleum ... ..	—	1,343	—	1,343	—	1,194	—	1,194
Total ... ..	394,405	144,287	6,651	545,343	395,930	147,308	6,824	550,067
II.—Salts.								
Boracite ... ..	8,907	5,952	8	14,867	9,790	7,306	12	17,108
Kainite ... ..								
Magnesium salts ... ..								
Potassium salts other than kainite								
Rock salt ... ..	507	438	17	962	613	441	19	1,073
Total ... ..	9,414	6,390	25	15,829	10,403	7,747	31	18,181
III.—Ores.								
Arsenic ore ... ..	248	165	2	415	250	160	2	412
Cobalt, nickel, and bismuth &c. ores ...	681	166	15	862	687	264	16	967
Copper ore ... ..	13,178	3,700	31	16,909	13,728	3,781	30	17,539
Iron ore ... ..	26,033	10,101	1,010	37,144	26,561	10,030	837	37,428
Iron pyrites ... ..	412	204	—	616	414	225	—	639
Lead ore ... ..	6,474	4,612	218	11,304	6,416	4,640	236	11,292
Manganese ore ... ..	295	89	1	385	271	74	2	347
Silver and gold ores ... ..	1,548	574	—	2,122	1,263	475	—	1,738
Tin ore ... ..	52	70	—	122	—	—	—	§
Uranium and tungsten ores ... ..								
Zinc ore ... ..	8,347	4,683	2,885	15,915	8,514	4,853	3,053	16,420
Vitriol and alum ores other than iron pyrites.	—	2	—	2	—	2	—	2
Total ... ..	57,268	24,366	4,162	85,796	58,104	24,504	4,176	86,784
Total for the German Empire ... ..	461,087	175,043	10,838	646,968	464,437	179,554	11,041	655,032
Grand Duchy of Luxemburg—iron ore	4,082	2,176	4	6,262	4,189	2,089	—	6,278

\* Vierteljahrshefte zur Statistik des Deutschen Reichs; Jahrgang, 1905, Berlin, IV. Heft.

† Including tin, uranium and tungsten ore workers. " 1906 "

‡ Including tin, uranium and tungsten ore workers.

§ Included with cobalt, &amp;c., workers.



## GERMAN EMPIRE—continued.

TABLE 444.

PERSONS EMPLOYED at WELLS producing BRINE or other MINERAL SOLUTIONS during the Years 1904 and 1905.\*

Mineral Solution.	1904.			1905.		
	Men.	Women.	Total.	Men.	Women.	Total.
Sodium chloride ... ..	3,566	20	3,586	3,577	24	3,601
Potassium chloride ... ..	4,719	35	4,754	5,455	37	5,492
Sulphates or chlorides of sodium, potassium, magnesium, or aluminium.	769	14	783	785	15	800
Total ... ..	9,054	69	9,123	9,817	76	9,893

For persons employed at quarries, see page 410.

TABLE 445.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1904 and 1905.\*

Mineral.	1904.		1905.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
I.—COALS, ASPHALT, &c.				
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Asphalt ... ..	91,736	891	103,006	990
Brown coal ... ..	48,635,080	112,101	52,512,062	122,239
Coal ... ..	120,815,503	1,033,861	121,298,607	1,049,980
Graphite ... ..	3,784	169	4,921	209
Petroleum ... ..	89,620	5,805	78,869	5,207
Total value ... ..	—	1,152,827	—	1,178,625
II.—SALTS.				
Boracite ... ..	135	20	183	30
Kainite ... ..	1,905,893	26,565	2,387,643	33,516
Magnesium salts ... ..	695	6	706	5
Potassium salts, other than kainite ...	2,179,471	22,294	2,655,845	26,875
Rock salt ... ..	1,079,868	5,013	1,165,495	5,506
Total value ... ..	—	53,898	—	65,932
III.—ORES.				
Antimony ore ... ..	—	—	1	—
Arsenic ore ... ..	4,390	324	4,913	414
Cobalt, nickel, and bismuth ores ...	14,016	930	10,855	897
Copper ore ... ..	798,214	21,731	793,488	23,500
Iron ore ... ..	15,699,622	63,501	16,848,213	68,559
Iron pyrites ... ..	174,782	1,336	185,368	1,463
Lead ore ... ..	164,440	14,706	152,725	15,346

\* Vierteljahrshefte zur Statistik des Deutschen Reichs; Jahrgang, 1906, Berlin, IV. Heft.

GERMAN EMPIRE—continued.

TABLE 445—continued.

QUANTITY and VALUE of MINERALS produced from MINES in the GERMAN EMPIRE during the Years 1904 and 1905—continued.

Mineral.	1904.		1905.	
	Quantity produced.	Value of the Mineral reckoned at the Mines.	Quantity produced.	Value of the Mineral reckoned at the Mines.
III.—ORES—cont.	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Manganese ore ... ..	52,886	591	51,463	598
Silver and gold ores ... ..	10,405	1,206	10,286	1,194
Tin ore ... ..	99	53	123	69
Uranium and tungsten ores ... ..	23	33	38	68
Vitriol and alum ores, other than iron pyrites.	770	7	636	5
Zinc ore ... ..	715,728	39,479	731,271	47,838
Total value ... ..	—	143,897	—	159,951
Total value for the German Empire in marks.	—	1,350,622	—	1,404,508
Total value for the German Empire in £ sterling.	—	£67,531,100	—	£70,225,400
Grand Duchy of Luxemburg—iron ore	6,347,771	13,167	6,595,860	13,211

TABLE 446.

QUANTITY and VALUE of MINERALS produced from BRINE, &c. WELLS during the Years 1904 and 1905.\*

Mineral Solution.	1904.†		1905.	
	Quantity.	Value.	Quantity.	Value.
1. Alkaline sulphates :—	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks
(a.) Potassium sulphate... ..	43,959	6,994	47,994	7,580
(b.) Potassium and magnesium sulphate.	29,285	2,294	34,222	2,583
(c.) Sodium sulphate ... ..	76,034	1,946	68,455	1,893
2. Earthy sulphates :—				
(a.) Aluminium sulphate ... ..	55,881	3,474	55,806	3,554
(b.) Alum... ..	3,850	423	4,270	472
3. Magnesium chloride ... ..	25,730	539	29,017	584
4. Magnesium sulphate ... ..	39,412	607	58,567	866
6. Potassium chloride ... ..	297,238	35,402	373,177	44,456
6. Salt (sodium chloride) ... ..	621,787	14,706	612,062	14,786
Total value in marks ... ..	—	66,385	—	76,774
„ „ £ sterling ... ..	—	£3,319,250	—	£3,838,700

\* Vierteljahrshefte zur Statistik des Deutschen Reichs ; Jahrgang, 1906, Berlin, IV. Heft.  
† Revised figures.



GERMAN EMPIRE—*continued.*

The following tables give the output and value of some of the more important minerals, classified according to the States in which they were produced.

TABLE 447.

*Brown Coal.*

State.	1904.*		1905.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Anhalt ... ..	1,376,753	4,292	1,464,780	4,584
Bavaria ... ..	53,517	177	122,414	364
Brunswick ... ..	1,440,241	4,202	1,725,245	6,369
Hesse ... ..	373,407	779	422,114	919
Prussia ... ..	41,153,576	92,239	44,148,751	98,802
Saxe Altenburg ... ..	2,262,674	5,442	2,408,463	5,696
Saxony ... ..	1,922,104	4,814	2,167,733	5,350
Other German States ... ..	52,808	156	52,562	155
Total value in marks ... ..	} 48,635,080 {	112,101	} 52,512,062 {	122,239
„ „ £ sterling ... ..		£5,605,050		£6,111,950

TABLE 448.

*Coal.*

State.	1904.*		1905.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Alsace-Lorraine ... ..	1,708,477	17,746	1,823,679	19,341
Bavaria ... ..	1,341,926	14,585	1,317,951	14,304
Prussia ... ..	112,755,621	948,350	113,000,657	961,561
Saxony ... ..	4,803,501	50,826	4,943,007	52,321
Other German States ... ..	205,978	2,354	213,313	2,453
Total value in marks ... ..	{ 120,815,503 }	1,033,861	{ 121,298,607 }	1,049,980
„ „ £ sterling ... ..		£51,693,050		£52,499,000

**TABLE 449.**

*Rock Salt.*

State.	1904.*		1905.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Anhalt ... ..	296,992	1,214	316,961	1,303
Prussia ... ..	394,910	1,911	426,942	2,199
Württemberg ... ..	318,005	1,562	358,847	1,767
Other German States ... ..	69,961	326	52,745	237
Total value in marks... ..	} 1,079,868 {	5,013	} 1,165,495 {	5,506
"    "    £ sterling ... ..		£250,650		£275,300

\* *Vierteljahrshäfte zur Statistik des Deutschen Reichs*; Jahrgang, 1905, Berlin, IV. Heft.

† " " " " " " 1906

GERMAN EMPIRE—continued.

TABLE 450.  
Iron Ore.

State.	1904.*		1905.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Alsace-Lorraine ... ..	11,135,042	29,704	11,967,725	32,190
Bavaria ... ..	180,342	1,587	182,390	1,566
Brunswick ... ..	219,933	476	152,229	374
Hesse ... ..	229,243	1,830	227,958	1,801
Prussia ... ..	3,757,651	29,169	4,130,210	31,858
Saxe-Meiningen ... ..	113,102	428	146,167	555
Waldeck... ..	30,504	153	27,918	144
Other German States ... ..	33,805	154	13,616	71
Total value in marks... ..	15,699,622 {	63,501	16,848,213 {	68,559
" " £ sterling ... ..		£3,175,050		£3,427,950
Grand Duchy of Luxemburg ... ..	6,347,771 {	13,167	6,595,860 {	13,211
		£658,350		£660,550

TABLE 451.  
Silver and Gold Ores.

State.	1904.*		1905.†	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	1,000 Marks.	Metric Tons.	1,000 Marks.
Total quantity and value in marks for German Empire ... ..	10,405 {	1,206	10,286‡ {	1,194
" " " £ sterling ... ..		£60,300		£59,700

According to a return§ of the mining branch of the great industrial insurance institution of the German Empire, which numbers more than half a million members, the deaths from accidents among persons employed in and about mines and smelting works have been as follows :—

TABLE 452.  
DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS in GERMANY.

Year.	Deaths which occurred in the same year as the accident.		Total Deaths, including those which took place after the close of the year in which the accident happened.	
	Number of Deaths.	Number of Deaths per 1,000 Persons Insured.	Number of Deaths.	Number of Deaths per 1,000 Persons Insured.
1896	971	2·18	1,029	2·30
1897	961	2·05	1,012	2·16
1898	1,254	2·53	1,306	2·64
1899	1,060	2·03	1,111	2·13
1900	1,145	2·02	1,198	2·12
1901	1,289	2·12	1,339	2·20
1902	1,080	1·80	1,131	1·88
1903	1,159	1·87	1,190	1·92
1904	1,178	1·83	1,204	1·87
1905	1,235	1·91	—	—

\* Vierteljahrshefte zur Statistik des Deutschen Reichs ; Jahrgang, 1905, Berlin, 1V. Heft.  
† 1906  
‡ 100 kilos. of fine gold and 180,977 kilos. of fine silver were extracted from these ores at the Metallurgical Works in 1905.  
§ Einundzwanzigster Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1905, Berlin, p. 42.



GERMAN EMPIRE—continued.

TABLE 453.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1905.\*

Kind of Workings.	Average Number of Persons Insured.	Number of Deaths from Accidents.			Death-rate per 1,000 Persons Insured.
		Males.	Females.	Total.	
Brown coal mines ... ..	58,922	121	1	122	2·07
Coal mines ... ..	474,916	1,000	1	1,001	2·11
Ore mines and smelting works ...	79,801	70	—	70	·88
Salt mines and brine works ... ..	26,444	31	—	31	1·17
Other mineral workings ... ..	7,375	11	—	11	1·49
Total ... ..	647,458	1,233	2	1,235	1·91

TABLE 454.

ACCIDENTS CLASSIFIED so as to show whether they were due to the WORKMEN'S NEGLIGENCE, Year 1905.†

Section.	Accidents.								Total Number of Accidents.
	Owing to Danger Inherent to the Work itself.		By Defects in the Working.		Through Fault of Fellow Workman.		Through Fault of Injured Person.		
	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	Number.	Per cent.	
1. Bonn ... ..	1,222	71·16	9	0·52	32	1·86	455	26·46	1,718
2. Bochum ... ..	3,949	84·15	3	0·06	155	3·81	584	12·48	4,691
3. Clausthal ... ..	144	57·37	2	0·80	12	4·78	93	37·05	251
4. Halle ... ..	392	45·01	32	3·67	38	4·86	409	46·96	871
5. Waldenburg ... ..	132	69·11	—	—	14	7·33	45	23·56	191
6. Tarnowitz ... ..	726	39·00	36	1·90	105	5·60	997	53·50	1,864
7. Zwickau ... ..	222	63·61	6	1·72	18	5·16	103	29·51	349
8. Munich ... ..	112	85·49	2	1·53	1	0·76	16	12·22	131
Total ... ..	6,899	68·51	90	0·90	375	3·73	2,702	26·86	10,066

The main result of this table is that nearly 27 per cent. of the accidents were due to the carelessness of the persons injured. The preceding year the percentage was 28.

\* *Einundzwanzigster Bericht über die Verwaltung der Knappschafts-Berufsgenossenschaft für das Jahr 1905*, Berlin, 1906. pp. 68-71.

† *Ibid.*, p. 42.

GERMAN EMPIRE—continued.  
TABLE 455.  
PERSONS INJURED BY ACCIDENTS IN AND ABOUT QUARRIES, WHO RECEIVED COMPENSATION DURING THE 10 YEARS 1896 TO 1905.\*

1. Year	(a) Number, Age, and Sex of Persons Injured.						8 Per 1,000 Persons Insured.	9 Motors, Belts and Gearing, Transmissions and Working Machines.	10 Cages, Lifts, Cranes, Hoists.	11 Steam Boilers and Steam Pipes.	12 Explosions.	13 Burns or Scalds from Hot Gases, Steam, &c.	14 Falls of Ground or of Materials.	15 Falls from Ladders, Steps, &c., out of Windows, &c., into Holes, &c.	16 Loading or unloading, Lifting, Carrying, &c.	17 Run over by Carts, Waggon, &c.	18 Railways, Run over, &c.	19 Ships, Boats, Barges, &c., Falling Overboard, &c.	20 Animals (Blows, Kicks, Bites, &c.), including all Accidents in Riding.	21 Handtools (Hammer, Axe, Pick, Spade, &c.)	22 Miscellaneous.	Deaths.		Lasting incapacity for Work.		27 Temporary Incapacity for Work.	Number of the dependent relatives of persons killed entitled to compensation.				31. Total.
	Adults.		Young Persons Under 16.		23 Number.	24 Per 1,000 Persons Insured.																25 Complete.	26 Incomplete.	28 Widows.	29 Children.		30 Other Dependent relatives.				
	M.	F.	M.	F.																											
1896	252,200	1,305	2	25	—	1,332	5.3	77	28	4	65	12	372	171	175	78	123	6	7	182	32	171	0.67	16	760	385	108	278	7	393	
1897	330,882	1,537	3	13	—	1,554	4.7	85	29	1	90	15	442	204	173	92	191	10	7	180	35	228	0.68	11	882	433	156	330	15	601	
1898	369,257	1,587	7	22	1	1,616	4.4	111	40	6	82	12	406	212	187	98	219	15	13	198	17	249	0.67	16	912	439	160	399	11	570	
1899	416,095	1,885	2	15	—	1,902	4.5	123	54	1	111	18	469	264	203	124	234	9	11	262	19	257	0.62	22	969	654	153	351	13	517	
1900	419,144	1,947	4	22	—	1,973	4.7	167	71	1	113	18	466	295	169	102	232	13	19	281	26	272	0.65	19	991	691	180	393	13	586	
1901	384,086	2,147	5	45	—	2,197	5.7	161	62	4	109	10	551	278	247	107	274	12	26	313	43	234	0.61	21	1,006	933	144	321	21	486	
1902	378,813	2,217	21	49	—	2,289	6.0	167	62	7	68	64	563	280	237	134	291	11	13	358	34	227	0.51	33	1,129	900	157	418	11	586	
1903	391,172	2,199	12	62	2	2,273	5.8	156	104	7	96	25	494	317	215	123	288	13	19	374	42	246	0.63	26	1,088	913	166	407	7	580	
1904	406,617	2,276	28	43	—	2,347	5.8	200	94	11	77	41	509	300	242	120	326	17	26	329	55	224	0.55	42	1,008	1,073	137	331	16	484	
1905	427,122	2,374	17	44	1	2,436	5.2	218	84	5	101	60	484	332	248	114	323	22	31	368	46	238	0.55	46	923	1,229	156	415	13	584	

\* *Verwaltungs-Bericht des Vorstandes der Steinbrüche-Berufsgenossenschaft über das XX. Rechnungsjahr 1905*, Berlin, 1906, p. 9.  
The figures in Column 2 represent the total number of persons employed in a quarry at any time during the year for however short a period. The number of persons employed full time, reckoning 300 days' work a year for each person, is given as 158,261 in 1904 and 160,848 in 1905.  
The number of deaths in column 23 represents the number of cases in which compensation had been paid by the Insurance Board during the year, and differs slightly from the number reported as occurring during the year, which is stated as 235 in 1904 and 241 in 1905.  
The death-rate of the full time (300 days) workers was 1.5 for 1904 and also for 1905.



## GERMAN EMPIRE—continued.

Separate statistics have been obtained for the following States, forming parts of the German Empire, viz., Bavaria, Prussia, and Saxony.

## BAVARIA.\*

TABLE 456.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1904 and 1905.

Kind of Mines or Mineral Workings.	1904.		1905.		Kind of Mines or Mineral Workings.	1904.		1905.	
	Men.	Women and Children.	Men.	Women and Children.		Men.	Women and Children.	Men.	Women and Children.
Barytes ...	144	288	141	270	Lithographic stone	570	225	982	578
Basalt ...	1,104	3,076	1,173	2,839	Melaphyre, &c. ...	1,779	4,111	1,834	4,523
Brown coal ...	263	614	541	1,294	Ochre, &c. ...	119	244	116	176
Cement marl ...	376	657	244	340	Paving stones ...	451	399	76	43
Coal ...	7,747	16,405	7,990	15,801	Petroleum ...	30	—	30	40
Copper ore ...	13	26	48	86	Porcelain earth ...	147	141	139	147
Emery ...	6	27	4	15	Salt, rock ...	120	203	103	171
Feldspar ...	32	61	29	68	„ from brine ...	233	683	245	743
Fireclay ...	651	1,473	729	1,560	Sand ...	285	400	169	252
Fluorspar ...	34	108	40	169	Sandstone ...	3,733	8,610	3,786	8,693
Granite ...	3,848	7,713	3,616	10,087	Slates (roofing and slabs). ...	84	208	64	190
Graphite ...	242	338	293	314	Stentite ...	71	213	68	219
Gypsum ...	40	74	114	303	Whetstone ...	11	1	15	10
Iron ore ...	849	2,298	874	2,058					
Iron pyrites ...	44	121	44	160					
Limestone ...	1,848	3,723	1,924	3,198					
					Total ...	24,874	52,440	25,431	54,347

TABLE 457.

QUANTITY and VALUE of MINERALS obtained during the Years 1904 and 1905.

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes ...	9,411	59,912	10,030	81,165
Basalt ...	713,687	1,240,422	673,864	1,434,287
Brown coal ...	42,470	138,875	137,138	400,244
Cement marl ...	170,698	263,176	231,310	351,526
Coal ...	1,184,599	13,621,538	1,178,360	13,541,210
Emery ...	265	11,725	255	11,350
Feldspar ...	1,866	22,540	1,710	20,685
Fireclay ...	173,126	1,209,926	210,968	1,464,876
Fluorspar ...	4,770	45,820	4,413	42,930
Granite ...	325,923	2,050,807	448,525	2,288,483
Graphite ...	3,784	168,581	4,921	208,840

\* Übersicht der Produktion des Bergwerks-Hütten-u. Salinenbetriebes im Bayerischen Staate für das Jahr 1905.

## GERMAN EMPIRE.—BAVARIA—continued.

TABLE 457—continued.

QUANTITY and VALUE of MINERALS obtained during the Years 1904 and 1905—cont.

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Gypsum... ..	22,766	72,719	46,247	82,781
Iron ore... ..	180,342	1,587,019	182,389	1,565,712
„ pyrites ... ..	3,427	44,800	3,301	39,798
Limestone ... ..	824,971	1,544,601	890,109	1,718,397
Lithographic stone ... ..	13,836	1,711,400	11,360	1,406,820
Melaphyre, &c. ... ..	573,748	1,396,525	501,481	1,241,157
Ochre, &c. ... ..	19,107	110,419	18,285	169,310
Paving stones ... ..	12,958	247,977	9,070	155,155
Porcelain earth ... ..	95,160	95,160	99,910	150,090
Salt, rock ... ..	1,139	21,454	911	14,584
„ from brine ... ..	43,048	1,930,168	42,591	1,905,746
Sand ... ..	274,346	412,933	248,872	314,924
Sandstone ... ..	576,561	2,932,899	648,303	4,046,212
Slates (roofing and slabs) ... ..	1,486	75,434	1,234	64,561
Steatite ... ..	1,709	159,494	1,872	191,370
Whetstone ... ..	50	2,500	25	2,600
Total value in Marks ... ..	{ — }		{ — }	
„ „ £ sterling ... ..	{ — }		{ — }	

## PRUSSIA.

TABLE 458.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1904 and 1905.\*

Kind of Mines or other Mineral Workings.	1905.				Total for preceding year.
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal ... ..	15,015	11,104	18,488	44,607	43,297
Coal ... ..	341,728	—	110,423	452,151	449,160
Ore... ..	44,355	1,443	22,722	68,520	66,824
Other mineral workings ... ..	9,912	1,539	11,701	23,152	21,401
Total ... ..	411,010	14,086	163,334	588,430	580,682

\* Zeitschr. B. H. S. W., Vol. LIV., p. 50.



GERMAN EMPIRE.—PRUSSIA—*continued.*

TABLE 459.

QUANTITY and VALUE of MINERALS obtained from MINES during the Years  
1904 and 1905.

Mineral.	1904.*			1905.†		
	Number of Mines.	Output.		Number of Mines.	Output.	
		Quantity.	Value.		Quantity.	Value.
I.— <i>Coals and Asphalt.</i>						
Asphalt ... ..	3	Metric Tons. 26,348	Marks. 253,231	3	Metric Tons. 28,872	Marks. 275,576
Brown coal ... ..	365	41,153,576	92,239,200	366	44,148,751	98,801,949
Coal ... ..	272	112,755,621	948,349,673	281	113,000,657	961,560,890
Petroleum ... ..	35	67,604	4,484,018	25	57,741	4,044,503
Total ... ..	675	154,003,149	1,045,326,122	675	157,236,021	1,064,682,918
II.— <i>Salts.</i>						
Boracite (pure) ... ..	—	115	16,942	—	151	24,268
Kainite ... ..	15	1,261,930	17,704,145	24	1,580,530	22,312,827
Magnesium salts ... ..	—	289	1,918	—	338	2,106
Potassium salts, other than kainite.	18	1,447,323	14,234,739	21	1,734,033	16,909,975
Rock salt ... ..	6	394,910	1,911,343	6	436,942	2,198,785
Total ... ..	39	3,104,567	33,869,087	51	3,751,994	41,447,961
III.— <i>Ores.</i>						
Antimony ore ... ..	—	—	—	—	1	19
Arsenic ore ... ..	1	3,527	282,775	2	4,022	378,258
Cobalt ore ... ..	—	41	12,674	—	22	2,378
Copper ore ... ..	35	782,049	21,458,976	31	769,381	23,130,600
Gold and silver ore ... ..	—	8	71,425	—	4	10,828
Iron ore ... ..	355	3,757,651	29,168,622	362	4,130,210	31,857,999
Iron pyrites ... ..	4	163,209	1,221,204	4	174,641	1,356,721
Lead ore ... ..	89	150,328	14,529,184	92	138,928	15,163,276
Manganese ore ... ..	20	52,092	549,865	12	51,048	572,152
Nickel ore ... ..	2	13,518	227,930	2	10,432	208,926
Vitriol ores and alum ores, other than iron pyrites.	—	106	634	—	97	583
Zinc ore ... ..	45	710,599	39,154,809	48	727,104	47,525,309
Total ... ..	551	5,633,128	106,678,098	553	6,005,890	120,207,049
Gross Total ... ..	1,265	162,740,844	1,185,873,307	1,279	166,993,905	1,226,337,928
Total value in £ sterling	—	—	£59,293,665	—	—	£61,316,896

\* *Zeitschr. B. H. S. W.*, Vol. LIII., p. 20.

† " " Vol. LIV. p. 20.

## GERMAN EMPIRE.—PRUSSIA—continued.

TABLE 460.

QUANTITY and VALUE of SALTS obtained from BRINE WELLS, &c. during the Years 1904 and 1905.

Description of the Product.	1904.*					1905.†				
	Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.		Number of Works during the Year.		Quantity of Rock Salt and other raw Material added to the Solution.	Output.	
	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By- product.		Quantity.	Value.	(a) in which the Salt named in the adjacent Column is the Main Product.	(b) in which the Salt named in the adjacent Column is a By- product.		Quantity.	Value.
<b>1. Alkaline Sulphates:—</b>			Metric Tons.	Metric Tons.	Marks.			Metric Tons.	Metric Tons.	Marks.
(a) Potassium sulphate ..	2	12	104,056	30,261	4,837,540	1	13	67,039	26,441	4,207,407
(b) Potassium and mag- nesium sulphate.	—	11	25,577	18,826	1,500,130	—	11	17,452	18,994	1,428,814
(c) Sodium sulphate ..	9	7	38,938	61,097	1,520,152	9	8	39,067	52,094	1,356,353
<b>2. Earthy Sulphates:—</b>										
(a) Aluminium sulphate..	3	1	11,554	13,216	739,683	3	1	10,845	13,365	751,979
(b) Alum .. .. .	1	1	970	1,308	150,737	1	1	1,048	1,548	178,759
<b>3. Magnesium chloride ..</b>	—	4	20	13,161	362,797	—	4	20	15,337	367,284
<b>4. Magnesium sulphate ..</b>	—	7	35	22,204	366,123	—	8	35	36,967	568,065
<b>5. Potassium chloride ..</b>	19	4	1,129,435	183,694	23,037,400	21	3	1,511,787	239,638	28,800,249
<b>6. Salt (sodium chloride) ..</b>	34	4	108,940	328,933	6,808,492	35	4	116,832	328,051	7,016,871
<b>Total .. .. .</b>	68	51	1,416,534	672,700	38,323,054 £1,916,153	70	51	1,754,125	732,445	44,895,751 £2,234,788

TABLE 461.

DEATHS from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1905 and preceding Year.‡

Kind of Mines or other Mineral Workings.	1905.				Total for preceding year.
	Number of Deaths.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal   ...   ...   ...   ...   ...	42	13	24	79	86
Coal   ...   ...   ...   ...   ...	735	—	105	840	808
Ore   ...   ...   ...   ...   ...	66	—	10	76	61
Other mineral workings   ...   ...   ...	20	2	9	31	35
Total   ...   ...   ...   ...	863	15	148	1,026	990

\* Zeitschr. B. H. S. W., Vol. LIII, p. 21.

† " " Vol. LIV., p. 21.

‡ " " Vol. LIV., p. 53.



GERMAN EMPIRE.—PRUSSIA—*continued.*

TABLE 462.

DEATH-RATES from ACCIDENTS at MINES and other MINERAL WORKINGS during the Year 1905 and preceding Year.\*

Kind of Mines or other Mineral Workings.	1905.				Total for preceding year.
	Death-rate per 1,000 Persons Employed.				
	Below Ground.	In Open Workings.	On Surface.	Total.	
Brown coal ... ..	2·80	1·17	1·30	1·77	1·99
Coal ... ..	2·15	—	·95	1·86	1·80
Ore ... ..	1·49	—	·44	1·11	·91
Other mineral workings ... ..	2·02	1·30	·77	1·34	1·63
Total ... ..	2·10	1·06	·91	1·74	1·70

TABLE 463.

DEATHS from ACCIDENTS at MINES and MINERAL WORKINGS, classified according to kind of MINERAL WORKED, and cause of ACCIDENT, during the Year 1904, and the DEATH-RATES for 1904 and 1905.†

Cause of Accident.	Deaths from Accidents.					Death-rate per 1,000 Persons Employed.	
	Brown Coal Mines.	Coal Mines.	Ore Mines.	Other Mineral Workings.	Total.	1905.	1904.
Blasting . ...	—	32	10	2	44	·11	·86
Falls of ground ...	32	321	34	7	394	·96	·87
On inclines and in intermediate shafts. }	1	147	—	2	150	·36	·36
In shafts ... ..	5	76	15	8	104	·25	·29
In levels ... ..	3	45	2	—	50	·12	·13
Explosion of fire-damp, coal dust, or gases generated by fires. }	—	20	—	—	20	·05	·08
Suffocation by natural gases (without explosion), or gases generated by fires (without explosion), or blasting. }	1	56	—	—	57	·14	·03
Machinery... ..	—	2	—	—	2	·01	·01
Irruptions of water	—	2	—	—	2	·01	·01
In open workings	13	—	—	2	15	1·06	1·01
On surface... ..	24	105	10	9	148	·91	1·01
Sundries ... ..	—	34	5	1	40	·10	·12
Total ... ..	79	840	76	31	1026	1·74	1·71

\* Zeitschr. B. H. S. W., Vol. LIV., p. 53.

† " " " pp. 48-51.

GERMAN EMPIRE.—PRUSSIA—continued.

The three worst accidents\* of the year were as follows :—

TABLE 464.

Name and situation of Mine.	No. of Persons Killed.	Cause.
Borussia Colliery, Westphalia ... ..	39	Fire in shaft caused by the overturning of a petroleum lamp.
Prussian Colliery at Miechowitz, Upper Silesia.	15	A platform on which workmen were standing during the sinking of the Jelkas pit, fell to the bottom of the shaft.
Cons. Hultschiner Colliery, Petzkowitz, Silesia.	9	The men were imprisoned through the breaking of a pit prop, and, a fire occurring, were suffocated.

No cases of suffocation by fire-damp were recorded in 1905.

TABLE 465.

EXPLOSIONS of FIRE-DAMP or COAL DUST classified according to CAUSE.†

Cause.		1904.			1905.		
		Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.	Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.
I. Lighting	1. Naked lights ...	—	2	2	—	1	1
	2. Matches or smoking	1	1	2	2	—	2
	3. Illegally opened ...	1	—	1	—	—	—
	4. In defective condition or injured during work.	3	6	9	1	3	4
	5. Gauze becoming red hot.	—	—	—	—	—	—
	6. Oil or soot on gauze taking fire	—	—	—	—	—	—
	7. Passage of flame when relighting by amorces.	—	—	—	—	—	—
	8. Flame driven through gauze by ventilating current:						
	(a) In consequence of careless handling of lamp.	1	4	5	1	13	14
	(b) In consequence of the ventilating current being too rapid.	—	—	—	—	—	—
	(c) Miscellaneous ...	—	2	2	—	1	1
II. Shot firing ...	9. ... ..	1	10	11	—	3	3

\* Zeitschr. B. H. S. W., Vol. LIV., p. 54.  
† " " Vol. LIV., p. 68.



GERMAN EMPIRE.—PRUSSIA—*continued.*TABLE 465— *continued.*

Cause.		1904.			1905.		
		Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.	Number of Separate Fatal Accidents.	Number of Separate Non-fatal Accidents.	Total.
III. Underground fires.	10. Ventilating furnaces	—	—	—	—	—	—
	11. Accidental or spontaneous ignition of mineral, timber, or other material.	1	1	2	—	—	—
IV. Miscellaneous	12. Sparks from tools ...	—	—	—	—	—	—
	13. Sundries or unknown	1	—	1	1	1	2
Total ... ..		9*	26	35	5†	22	27

## SAXONY.‡

TABLE 466.

PERSONS EMPLOYED at MINES during the Years 1904 and 1905.

Kind of Mines.	1904.			1905.		
	Males.	Females.	Total.	Males.	Females.	Total.
Brown coal ... ..	3,410	131	3,541	3,493	117	3,610
Coal ... ..	25,304	299	25,603	24,536	279	24,615
Ore ... ..	3,161	1	3,162	2,579	8	2,587
Total ... ..	31,875	431	32,306	30,408	404	30,812

According to the Saxon Year-book, 79,160 persons were dependent upon the 30,812 workers in and about mines in 1905.

TABLE 467.

QUANTITY and VALUE of MINERALS obtained during the Years 1904 and 1905.

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Barytes ... ..	144	1,680	61	860
Bismuth, cobalt, and nickel ores ...	441	685,530	376	686,014
Brown coal ... ..	1,922,096	4,814,154	2,167,731	5,349,688
Coal ... ..	4,475,107	50,826,322	4,603,903	52,320,888

\* Causing 14 deaths, *Op. cit.*, Vol. LIII., p. 60.

† " " " " Vol. LIV., p. 63.

‡ *Jahrbuch für das Berg- und Hüttenwesen im Königreiche Sachsen, Jahrgang 1905*, Freiberg, pp. B65, 67, and 194.

GERMAN EMPIRE—continued.

TABLE 467—continued.

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Marks.	Metric Tons.	Marks.
Fluor spar ... ..	3,023	22,294	2,382	17,508
Iron ore ... ..	217	1,732	270	1,958
Limestone, &c. ... ..	—	27,918	—	26,358
Manganese ore ... ..	1	30	—	—
Ochre and amber ... ..	4	150	17	305
Pyrites (arsenical, iron and copper)...	8,700	105,517	7,724	95,694
Quartz, mica, and molybdenite ...	15	734	10	15,653
Silver ore ... ..	10,621	1,107,419	10,087	1,164,495
Tin ore ... ..	99	70,277	123	85,071
Uranium ore ... ..	—	—	5	15,719
Wolfram ... ..	23	32,522	34	52,256
Zinc ore ... ..	66	1,819	80	5,656
Specimens ... ..	—	5,676	—	2,967
Total value in marks ...	—	57,703,774	—	59,839,090
“ “ „ £ sterling ...	—	£2,885,189	—	£2,991,954

TABLE 468.

DEATHS and DEATH-RATES from ACCIDENTS at MINES during the Years 1904 and 1905.

Kind of Mines.	Deaths from Accidents.		Death-rate* per 1,000 Persons Employed.	
	1904.	1905.	1904.	1905.
Brown coal ... ..	12	8	3·50	2·10
Coal ... ..	24	31	·95	1·23
Ore ... ..	1	2	·32	·72
Total and average ... ..	37	41	1·16	1·29

\* In calculating the death-rate the persons employed in commercial work above ground, numbering 374 in 1905, are excluded.



## German South-West Africa.\*

Large deposits of copper ore have been proved to exist in the Otavi district, and the mineral has also been discovered at Otyizongati, about 40 miles east of Okahandja. In 1904 about 100 tons of ore were sent as samples to Germany and yielded over 28 per cent. of metallic copper.

The Otavi Mining Company in 1904 received the assistance of the Government in the construction of their railway from Swakomund to the Otavi Mines, and considerable progress was made in the work, the line being completed as far as Omaruru during that year.

## Greece.†

Greece is well supplied with numerous metallic ores, marble and other valuable minerals. The mining industry is improving, as the state revenue from this source, which in 1890 was only £67,234, amounted in 1905 to £729,709.‡

*Chrome Ore.*—This mineral is principally worked in Thessaly; 8,900 tons were obtained and exported from Volo in 1905.

*Emery.*—Naxos has long been famous for its emery; the trade in emery is a Government monopoly. The quantity exported from Syra in 1905 was 6,972 metric tons, valued at £29,699; 3,050 tons of this quantity were shipped to Rotterdam, and 1,433 tons to Genoa and the United States.

*Iron and Manganese.*—The ores of these two metals occur and are worked in the Laurium district, and in Grammatikon, Siphnos, Seriphos, Thermia and Milos. The deposits of iron ore in Seriphos occur in the west part of the island, and the amount exported therefrom in 1905 was 140,000 tons; the ore contains 51.50 per cent. of metal.

*Magnesite.*—Rich deposits of this mineral are a source of wealth to the Island of Eubœa.

*Marble.*—The marble industry of Greece is of considerable importance, and many of the quarries known to the ancients are being re-worked by English companies, viz., at Larissa and Pentelicon on the mainland, and in the islands of Skyros, Eubœa, and Tinos. One British Company (Mamor Limited), obtained 5,105 cubic metres of marble from its quarries in 1903, 3,258 cubic metres in 1904, and 2,198 cubic metres in 1905.‡

*Salt.*—This is obtained from sea water at Anavyssos, near Laurium, in the island of Leucados, and at Messolongi. The industry is a Government monopoly.

*Sulphur.*—Among other mineral products Milos supplies sulphur.

*Zinc.*—Calamine and blende occur with lead ore in the Laurium district and at Antiparos.

TABLE 469.

PERSONS EMPLOYED at MINES during the Years 1904 and 1905.§

Year.	Total Under and Above Ground.
1904 .. ...	9,893½
1905 ... ..	9,934

\* Whitehead, "Report on the German Colonies for the Years 1903-04." *Dipl. and Cons. Reports*, No. 3,519, Ann. Ser. [Cd. 2682-44], London, 1905, p. 31.

† Information furnished by the Ministry of Finance, Athens.

‡ Consul Walsh, "Trade and Agriculture of Piræus and District for the year 1905." *Dipl. and Cons. Reports*, No. 3621, Ann. Ser., 1906 [Cd. 2682-146].

§ Official Return furnished by the Ministry of Finance, Athens.

|| Revised figures

GREECE—continued.

TABLE 470.

QUANTITY and VALUE of MINERALS produced during the Years 1904 and 1905.\*

Mineral.	1904.†		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chromite ... ..	6,530	244,875	8,900	337,952
Emery ... ..	6,182	658,349	6,972	742,486
Gypsum ... ..	393	6,910	185	7,995
Iron ore ... ..	422,159	3,192,549	465,622	3,387,467
„ (Manganiferous) ... ..	108,319	1,252,832	89,687	1,182,652
Lead (argentiferous pig lead) ...	15,186	6,381,136	13,729	6,811,792
Lignite ... ..	13,500	170,940	11,757	143,814
Magnesite ... ..	44,828	960,852	43,498	864,982
Manganese ore ... ..	8,549	129,700	8,171	122,565
Millstones ... .. Pieces	12,744	22,670	12,628	34,660
Salt from sea water ... ..	27,000	1,526,850	25,201	1,638,065
Sulphur ... ..	1,225	132,710	1,126	121,000
Zinc ore ... ..	19,913	2,293,178	22,562	2,852,355
Total value in francs ... ..	—	16,973,551	—	18,247,785
£ sterling ... ..	—	£678,942	—	£729,911

TABLE 471.

DEATHS from ACCIDENTS at MINES during the years 1904 and 1905.

Year.				Deaths from Accidents.	Death-rate per 1,000 persons employed.
1904	...	...	...	13	1·31
1905	...	...	...	13	1·30

Greenland. (See DENMARK.)

\* Official Return furnished by the Ministry of Finance, Athens.  
† Revised figures.



## Guatemala.\*

The Mining industry which formerly largely contributed to the wealth of Guatemala has been allowed, chiefly through lack of adequate means of communication and expensive freights, to fall into decay, although there are now signs of reviving interest. It is recorded that during the 200 years preceding 1820, there were no fewer than 1,332 mines in operation throughout the country, many of them of great richness. The mineral deposits which contain the ores of antimony, copper, gold, iron, lead, manganese, silver and zinc, besides coal, lignite, graphite, gypsum, marble, mica, salt, sulphur, talc, and turquoises, are distributed in different parts of the Republic. A new road has been made into the heart of the mining region and several valuable mineral properties are being developed.

Seams of Bituminous coal from 1 to 4 feet thick exist in many localities within a few miles of the Port of Livingston, but are not worked.

Hydraulic mining for gold is carried on at Las Quebradas, and the mines are reported to yield large profits to the owners.

In Huetuetenango there are vast bodies of silver-lead ores which are practically self-fluxing.

Considerable interest has been taken recently in Mica, which exists in large quantities.

## Hayti.†

Coal has been found in various districts, and a railway is about to be constructed from Les Cayes to Perrin, which will facilitate the transport of coal from the mine at Camp Perrin. A little gold washing is done in the North of the Island. Copper and Iron have been worked near Gonaïves, apparently with satisfactory results. 10 tons of copper were shipped in 1904, and 7 tons in 1905, principally from Port au Prince and Aux Cayes.

## Herzegovina. (See AUSTRIA-HUNGARY.)

## Holland.‡

Holland possesses immense peat bogs,§ which produce about 100 million hectolitres of good fuel annually. Since 1893 the turbaries have been further utilized for making peat litter. There are now nine factories producing it; they employ about 2,500 persons, and their total output is more than 220,000 tons of peat litter a year.

There are coal mines at Heerlen and Kerkrade||; and underground stone quarries are worked at Maastricht and Valkenberg.

TABLE 472.

PERSONS EMPLOYED at MINES during the Years 1904 and 1905.

Year.	Under-ground.			Above-ground.			Total Under-ground and Above-ground
	Males.	Females.	Total.	Males.	Females.	Total.	
1904 ...	1,585	—	1,585	577	—	577	2,162
1905 ...	1,608	—	1,608	426	—	426	2,034

\* Consul Hervey, "Trade, Finance and Agriculture of Guatemala for the Year 1905." *Dipl. and Cons. Reports*, No. 3,686, Ann. Ser., 1906 [Cd. 2682-211], pp. 11 and 12.

† Consul-General Vansittart, "Trade and Finances of the Republic of Hayti and Santo Domingo for the Year 1904." *Dipl. and Cons. Reports*, No. 3,383, Ann. Ser., 1905 [Cd. 2236-129], p. 8, and "Trade of Hayti for the Year 1905," No. 3673 [Cd. 2682-198], 1906, pp. 8 and 11.

‡ Official Returns furnished by the Government of the Netherlands and "Uittreksel uit het Verelag van den Ingenieur der Mijnen in Nederland over het jaar 1905." 's Gravenhage, 1906.

§ Rommenhüller, *Mouvement du Commerce et de l'industrie des pays-Bas durant l'exercice 1898*. Rotterdam, 1899, p. 122.

|| Büttgenbach, "Die Geologie des alten Herzogthums Limburg." *B.N.A. Zeitung*, Vol. LVII, 1898, p. 363.

HOLLAND—continued.

TABLE 473.

PERSONS EMPLOYED at MINERAL WORKINGS other than MINES during the Years 1904 and 1905.

Year.	Under-ground.			Above-ground.			Total Number of Persons Employed in and about Mineral Workings other than Mines.
	Males.	Females.	Total.	Males.	Females.	Total.	
1904 ...	52	—	52	60	—	60	112
1905 ...	61	—	61	50	—	50	111

TABLE 474.

QUANTITY and VALUE of MINERALS produced during the Years 1904 and 1905.

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
		Florins.		Florins.
Building stone ... Cubic Metres	5,500	11,000	4,000	8,000
Coal ... ... Metric Tons	466,997	2,471,178	468,377	2,457,075
Total value in Florins ... ..	—	2,482,178	—	2,465,075
“ “ £ sterling ... ..	—	£206,848	—	£205,423

TABLE 475.

DEATHS from ACCIDENTS at MINES during the Years 1904 and 1905.

Year.	Under-ground			Above-ground.			Total Number of Deaths Under and Above Ground.	Death-rate per 1,000 Persons Employed.	
	Males.	Females.	Total.	Males.	Females.	Total.		Under-ground.	Under and Above Ground.
1904	3	—	3	—	—	—	3	1·89	1·39
1905	2	—	2	1	—	1	3	1·24	1·47

There were no fatal accidents at the underground stone quarries in 1904 and 1905.



**Honduras.\***

It appears from the Consular report that although the value of the ore extracted in 1905 compared with the previous year has doubled, there are no new mining enterprises in the Republic, and the increased value of ore is mainly due to the flourishing condition of one mine. Foreign labour and capital are needed, and some inducements should be held out to colonists by the Government in order to make the industry advantageous to the country. The exports of minerals during the two years ending 30th June, 1904 and 1905, respectively, were as follows:—

TABLE 476.

Mineral	1904.	1905.
	Value.	Value.
	£	£
Copper ... ..	38	17
Gold ... ..	14,896	19,495
Lead (metal) ... ..	191	190
Salt ... ..	643	1,005
Silver { Bar ... ..	30,239	52,832
{ Coined ... ..	12,091	1,736
Ore (unspecified) ... ..	43,803	102,574

**Indo-China.†****ANNAM.**

Annam and Tong-King possess large deposits of coal, iron ore, and argentiferous lead ore; besides having also asbestos, graphite, kaolin, and marble, and the ores of antimony, copper, gold, manganese, nickel, quicksilver, and tin.

The number of persons employed in 1905 at coal mines in Annam was 259 and at gold mines 348, as against 408 and 334, respectively, in the preceding year.

The output of the Nong-son coal mines in 1905 was 20,000 tons, valued at 250,000 francs (£10,000).

During the year 11 tons of gold ore, valued at 224,289 francs (£8,971) and containing 65 kilograms of fine gold and 26 kilograms of fine silver, were obtained from Bing-Miu gold mine.

Iron ore is smelted on a very small scale by the natives at Nho-Lam in the province of Quang-nam.

**COCHIN CHINA.**

6,200 kilograms of jet, valued at 12,400 francs, were obtained from mines in the island Phu-Quoc in the year 1895; but the mines do not appear to have been worked since, as no quantity is reported in the French statistics. In 1902, 28,766 tons of salt were exported.

**TONG-KING. (See also ANNAM.)**

In 1905 the "Société Française des Charbonnages du Tonkin" produced 242,772 tons of coal, valued at 2,427,720 francs (£97,109), and exported 111,421 tons, the Kebao Mines produced 7,744 tons, the Schoedelin Mine, 11,365 tons, and Edouard Mine, 7,058 tons. At the coal and lignite mines, 4,026 persons were employed in 1905, and 3,237 in the preceding year.

The Dong Giao Mine produced 8,500 tons of lignite or brown coal valued at 106,250 francs.

Some prospecting work for gold was carried on at the Moson Gold Mines in 1903-4, and gave employment to 40 Muongs and 250 Chinamen. Gold has been discovered to the south of the Pia-Ouac district in the region of the Ngan-son.

\* Consul Campbell, "Trade and Agriculture of Honduras for the year ended 30th June, 1905." *Dipl. and Cons. Reports*, No. 3,546 Ann. Ser., 1906 (Cd. 2682-71), pp. 3, 4 and 7.

† Return furnished by the French Government and published in *Statistique de l'Industrie Minérale en France et en Algérie, pour l'année 1905*, p. 67, and Legues "Statistiques Coloniales pour l'année 1905," published by the French Colonial Office, 1906.



INDO-CHINA.—TONG-KING—*continued.*

Copper of good quality is produced from the mines in the provinces of Sontay, Langson, and Laokay.

Iron mines are numerous and productive in the provinces of Hanoy, Thainguyen\* and Sontay.

Deposits of Nickel have been discovered in the province of Tuyenquang\*.

12 tons of tin and Wolfram ore valued at 18,000 francs, were obtained from Beau-Site Mine in 1905. The number of persons employed at the mine was 187.

Italy.†

The mineral industry of Italy may be briefly stated as follows :—

Sulphur is the most important mineral raised in the kingdom, and the bulk of it is obtained from Sicily. Next come zinc and lead ore; these are far more largely worked in Sardinia than in the peninsula itself. In the case of iron ore, the island Elba is the mainstay of the industry. Only a small quantity of the iron ore is now exported, as it is required for local needs.‡ The marble quarries of the Apuan Alps have long been a source of wealth to the country.

The following are a few additional particulars concerning some of the minerals :—

*Alunite.*—Quarrying natural alum-stone is a very old industry in the Tolfa hills north-east of Civita Vecchia. The open workings have now given place to underground mining, but the total output at the present day amounts to only a few thousand tons annually, and most of it is exported to France and Germany.

*Asphalt.*—A large quantity of bituminous limestone is quarried at Ragusa Superiore in the province of Syracuse. The principal seam is from 13 feet to 20 feet (4 to 6 m.) in thickness, and contains from 16 to 50 per cent. of bitumen. Over 85,000 tons were exported from Sicily in 1905. Important discoveries of asphalt rock have been made at Scicli, in Sicily.§

*Boric Acid.*—The amount of boric acid produced from the natural steam-puffs (*soffioni*) in the provinces of Pisa and Grosseto varies from two to three thousand tons yearly.

*Coal.*—The development of the deposits of fossil fuel, which mineral is stated to be abundant in the provinces of Sieno and Grosseto, is hindered by the cheapness of imported coal from the United Kingdom.‡ The total output in 1905 was only 412,916 tons, of which 407,887 tons were lignite, 1,163 tons anthracite, and 3,241 tons bituminous shale. Most of the lignite came from Tuscany, and the anthracite from the provinces of Cagliari (Sardinia) and Turin.

*Copper.*—The principal mines are situated in the Massa Marittima district, in the province of Grosseto, in Tuscany. All the ore obtained is now smelted locally.‡

*Gold.*—The gold veins in the flanks of Monte Rosa in Turin were worked by the Romans, and still continue to supply small quantities of the precious metal. Croppino is the principal mine worked.

*Granite.*—Piedmont boasts of excellent red granite and white granite, and the quarries at Baveno and Mont'Orfano on the Lago Maggiore are worked upon an extensive scale.

*Iron.*—‡The thick deposits of iron ore in the Island of Elba have been worked for many centuries, and are not yet exhausted. The ore is obtained in open quarries. The total output of 366,616 tons shows a decrease on the quantity obtained in 1904. The two blast furnaces erected at Portoferraio with the object of treating some of the second class ore on the spot are capable of producing 550 tons of pig iron daily. These furnaces, together with those at Piombino, smelt the whole of the Elban output of ore.

Important deposits of manganiferous iron ore exist at Monte Argentario, on the sea coast about 30 miles south of Elba, and arrangements are being made for smelting the ores on the spot. An abundance of peat of good quality is located in close proximity to the mines, which can be utilised with great advantage.

\* Consul Little, "Trade of Indo-China for the year 1902," *Dipl. and Cons. Reports*, No. 3117, Ann. Ser., 1904 [Cd. 1766-51.]

† *Rivista del Servizio Minerario nel 1905*. Roma, 1906.

‡ Vice-Consul Tonietti, "Trade of Elba for the years 1902-03," *Dipl. and Cons. Reports*, No. 3319, Ann. Ser., 1904, [Cd. 2236-63], p. 4.; and Consul-General Chapman, "Mineral Wealth of the Provinces of Siena and Grosseto," *Dipl. and Cons. Reports*, No. 633, Misc. Ser., 1905 [Cd. 2237-14].

§ Consul Churchill, "Trade of Sicily for the year 1905," *Dipl. and Cons. Reports*, No. 3595, Ann. Ser., 1906 [Cd. 2682-120], p. 14.



## ITALY—continued.

**Lead and Zinc.**—Sardinia is remarkable for its deposits of the ores of lead and zinc. Malfidano, in the province of Cagliari, is the most important zinc mine in the island. It employs 3,000 workmen, and produces annually on an average zinc ore of the value of £200,000.

**Marble.\***—The well-known Carrara marble is obtained from beds of crystalline limestone of Triassic age, which in places attain the enormous thickness of more than 3,000 feet (1,000 m.). In addition to the finest white statuary marble, the quarries furnish many coloured varieties, each known in commerce by its special name.

The importance of the industry may be gauged by the fact that the quarries and dressing establishments of the Apuan Alps gave work to 13,240 persons in 1905, or more than are employed in all the open slate quarries of North Wales. 226,878 tons of marble were exported from Carrara during that year; more than one-third of which was sent to the United States and Great Britain.

**Petroleum**—Oil is being pumped from 21 wells at the Montechino mines.

**Quicksilver.**—Cinnabar is obtained at Monte Amiata in Tuscany.

**Salt.**—The deposits of rock salt worked in Sicily belong to the Upper Miocene period, and lie geologically above the sulphur-bearing rocks. The Sicilian mines produced 13,890 tons in 1905, and the province of Cosenza 5,779 tons. Salt is obtained from sea water by solar evaporation, and especially in Sardinia and Sicily. The total output of sea salt in 1905 was 405,274 tons.

**Sulphur.**—The sulphur of Sicily is found in seams and lenticular masses in rocks of Upper Miocene age, and mainly in the provinces of Caltanissetta and Girgenti. In the year 1905 there were 895 mines at work, employing 31,513 workmen, and the output of sulphur-bearing rock was 3,529,696 tons. The amount of sulphur obtained was 536,782 tons.

The proportion of the total output of sulphur extracted by the old-fashioned kilns (*calcaroni*) goes on diminishing from year to year. Thirteen years ago 74·5 per cent. of the total output was obtained in this manner, 17 per cent. by kilns with communicating chambers, and 8·5 per cent. by steam apparatuses; last year the corresponding proportions were 29·0, 61·0 and 10·0 per cent. The Sanfilippo kiln, which was introduced for treating the fine mineral (*sterri*), obtained 4,304 tons of sulphur from 24,394 tons of ore in 1905.†

**Volcanic Lava and Ash.**—Basaltic lava is quarried on a large scale at the foot of Vesuvius, and so is volcanic ash known as “pozzolana.” Similar products are obtained near Rome. The Island of Lipari exported 11,196 tons of pumice stone in 1905.

TABLE 477.

NUMBER of MINERAL WORKINGS, VALUE of OUTPUT, and NUMBER of PERSONS EMPLOYED in the Years 1904 and 1905.‡

Kind of Workings.	1904.			1905.		
	Number at Work.	Total Value of Output.	Number of Persons Employed.	Number at Work.	Total Value of Output.	Number of Persons Employed.
Mines, &c. ...	1,546	Lire. 85,204,934	62,385	1,506	Lire. 88,942,669	63,996
Quarries ...	11,576	43,856,105	59,063	11,452	45,004,560	59,342
Turbaries ...	47	230,038	739	51	237,070	623
Sea salt ...	65	3,005,066	2,868	65	2,920,563	2,797
Total ...	—	Lire 132,296,143 £ sterling 5,291,846§	125,055	—	Lire 137,104,862 £ sterling 5,484,194§	126,758

\* Consul Keene, “Trade of Consular District of Genoa for the year 1901.” *Dipl. and Cons. Reports*, No. 2,820, Ann. Ser. [Cd. 786-124]. London, 1902, p. 36, and *Ibid* for 1904, No. 3446 [Cd. 2236-190].

† *Rivista del Servizio Minerario nel 1905*, p. 113.

‡ *Op. cit.* nel 1904, pp. xxix., xxxv., and lvi., and nel 1905, pp. xxvii., xxxiii., and liv.

§ Value calculated at 25 lire = 1£ sterling.

## ITALY—continued.

TABLE 478.

NUMBER of PERSONS EMPLOYED in and about MINES and other MINERAL WORKINGS (exclusive of Quarries, Turbaries, and Sea Salt Workings) during the Years 1904 and 1905,\* classified according to mineral wrought.

Kind of Mines or other Mineral Workings.	1904.		1905.	
	Number of Mines or Workings.	Number of Persons Employed.	Number of Mines or Workings.	Number of Persons Employed.
Alum-stone ... ..	1	73	1	72
Antimony ore ... ..	8	289	11	295
Arsenic ore ... ..	1	3	—	—
Asphalt, &c. ... ..	12	1,241	16	1,198
Boric acid ... ..	12	453	11	446
Copper ore ... ..	35	3,062	39	3,163
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	64	3,373	59	3,198
Gas, carburetted hydrogen ... ..	(a)	(a)	(a)	(a)
Gold ore ... ..	7	193	11	252
Graphite ... ..	33	267	34	291
Iron ore ... ..	44	1,707	37	1,649
Iron pyrites (partly cupreous) ...	52	1,263	53	1,374
Lead ore ... ..	(b)	(b)	(b)	(b)
Manganese ore ... ..	10	93	7	113
Mineral waters ... ..	(a)	(a)	(a)	(a)
Nickel and cobalt ore ... ..	(c)	(c)	(c)	(c)
Petroleum ... ..	20	614	20	615
Quicksilver ... ..	15	972	13	1,166
Rock salt ... ..	20	385	23	404
Salt from springs ... ..	(a)	(a)	(a)	(a)
Silver ore ... ..	5	151	3	99
Sodium sulphate ... ..	1	11	—	—
Sulphur ... ..	1,018	33,156	955	33,744
Zinc ore ... ..	188	15,079	213	15,917
Total ... ..	1,546	62,385	1,506	63,996

\* *Rivista del Servizio Minerario*, nel 1904, pp. xvi., xxi., and xxii., nel 1905, pp. xiv., xix., and xx.

(a) Included with petroleum.

(b) Included with zinc ore.

(c) Included with copper ore.



## ITALY—continued.

TABLE 479.

QUANTITY and VALUE of MINERALS produced from MINES, QUARRIES, TURBARIES, and SALT WORKS during the Years 1904 and 1905.\*

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Lire.	Metric Tons.	Lire.
Alum-stone ... ..	8,000	48,000	8,500	51,000
Antimony ore ... ..	5,712	177,384	5,083	220,676
Arsenical pyrites ... ..	80	6,400	—	—
Asphalt, &c. ... ..	111,900	1,595,728	107,014	1,531,378
Boric acid ... ..	2,624	734,720	2,700	783,000
Copper ore ... ..	157,503	3,086,401	149,045	2,981,345
Fossil fuel: anthracite, brown coal, fossil wood, and bituminous shale.	362,151	2,975,225	412,916	3,435,398
Gas, carburetted hydrogen (cubic metres).	2,551,396	86,604	3,092,000	100,050
Gold ore... ..	(a) 1,540	22,980	1,200	36,000
Graphite ... ..	9,765	230,790	10,572	269,970
Iron ore ... ..	409,460	5,296,042	366,616	5,138,338
Iron pyrites (cupreous) ... ..	112,004	1,763,048	117,667	1,994,205
Lead ore ... ..	42,846	5,591,269	39,030	5,497,033
Manganese ore ... ..	2,836	86,630	5,384	147,880
Mineral waters ... ..	30,955	412,130	28,560	395,360
Peat ... ..	16,048	230,038	17,823	237,070
Petroleum ... ..	3,543	1,053,294	6,122	1,826,802
Quicksilver ... ..	60,403	1,320,020	63,378	1,514,009
Rock salt ... ..	18,638	346,769	19,669	388,376
Salt from springs ... ..	11,878	345,551	12,756	394,993
Salt, sea ... ..	433,810	3,005,066	405,274	2,920,563
Silver ore ... ..	143	151,135	170	125,298
Sodium sulphate ... ..	170	5,100	—	—
Sulphur, rock ... ..	3,539,444	41,582,108	3,760,534	42,828,381
Zinc ore ... ..	(b) 151,318	18,287,606	(c) 148,206	19,283,177
Produce from quarries (value) ... ..	—	43,856,105	—	45,004,560
Total value in lire ... ..	—	132,296,143	—	137,104,862
" " £ sterling ... ..	—	£5,291,846	—	£5,484,194

TABLE 480.

ACCIDENTS at MINES, arranged according to CAUSES, during the Years 1904 and 1905.†

Cause.	1904.					1905.				
	No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.		No. of separate Accidents.	No. of Persons Killed.	No. of Persons Injured.	Number of Deaths.	
				Per 1,000 Persons Employed.	Per 1,000,000 liras' worth of Mineral produced.				Per 1,000 Persons Employed.	Per 1,000,000 liras' worth of Mineral produced.
Falls of ground ...	112	64	72	1.02	.75	104	61	58	.95	.68
Suffocation by gases, explosions, and fires.	30	23	34	.37	.27	25	26	50	.41	.29
Falling down shafts, &c., and miscellaneous.	67	26	51	.42	.31	49	22	31	.34	.25
Blasting ... ..	11	7	9	.11	.08	16	5	20	.08	.06
Total ... ..	220	120	166	1.92	1.41	194	114	159	1.78	1.28

\* *Rivista del Servizio Minerario nel 1904*, pp. xxi., xxix., xlvii. and lvi., and *nel 1905*, pp. xix., xxvii., and liv.

† Ditto, *nel 1904*, p. lxx., and *nel 1905*, p. lxix.

(a) Besides this quantity 5,206 tons of ore containing 54 kilograms of gold were obtained whilst prospecting for minerals in the Turin district.

(b) Including 2,953 tons of copper, lead and zinc ore, of the value of 82,093 lire.

(c) " 322 " " " " " " " 6,440 "



ITALY—continued.

TABLE 481.

ACCIDENTS at QUARRIES, arranged according to CAUSES, during the Years 1904 and 1905.\*

Cause of Accident.	1904.				1905.			
	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed	Number of separate Accidents.	Number of Persons Killed.	Number of Persons Injured.	Death-rate per 1,000 Persons Employed.
Falls of ground ... ..	57	40	32	·68	46	35	18	·59
Falling down workings, and miscellaneous.	48	16	36	·27	52	11	44	·19
Blasting ... ..	20	3	19	·05	10	3	7	·05
Total ... ..	125	59	87	1·00	108	49	69	·83

Italian Possessions. (See ERITREA.)

Ivory Coast. (See FRENCH WEST AFRICA.)

Japan.

An account† of the mining industry accompanied by a map shewing the locality of the principal mines was published by the Japanese Government for the St. Louis Exhibition of 1904.

The mineral resources of Japan are undoubtedly great, and it is recorded that gold, silver, copper, iron, coal and petroleum have been produced since the 7th or 8th century, but it appears that no marked progress was made in working the deposits until after the year 1868, when the Government adopted Western methods in its Mining and Metallurgical Departments.

Some idea of the importance of the mineral wealth of the country may be gathered from the fact that the value of the output (excluding salt) for the year 1905 amounted to more than 7½ millions sterling.

A few particulars concerning the most important minerals are given below :—

*Coal.*—The coal of Japan is mainly bituminous and most of the seams belong to the Tertiary period. There are four chief coal-fields, three of which are situated in the Island of Kiushiu, viz. :—Chiku-ho in the Fukuoka district, from which more than half of the total output is obtained ; Miike in the Kumanoto district ; Takashima in the Nagasaki district, and the Ishikari in the Island of Hokkaido. Nearly 3 million tons of coal were exported in 1904, and 2½ million tons in 1905‡.

*Copper.*—The copper mines are the most numerous of the metal mines in Japan. They are situated principally in Shimozuke, Ugo, Kaga and Bitchu. The ores contain more or less gold and silver. The total output of refined copper in 1905 was 33,715 tons.

*Gold.*—Alluvial deposits of gold are being worked in the district of Esashi in the Island of Hokkaido.§ The principal mines from which auriferous quartz is obtained are in the provinces of Echigo and Satsuma. Gold also occurs in Formosa ; the mines and alluvial diggings are in the neighbourhood of Kelung, and their output in 1905 was 66,177 ozs.||

*Iron Ore.*—The deposits of iron ore in Japan occur chiefly in the form of either magnetic or micaceous iron. The mines are in Rikuchu, Echigo and Kozuke.

*Petroleum.*—The oil-bearing area is very extensive, stretching over the Island of Hokkaido, and the provinces of Echigo, Uzen, Ugo, Shinano, and Totomi. The most

\* *Rivista del Servizio Minerario nel 1904*, p. lxxiii. and *nel 1905*, p. lxxii.

† *Sketch of the Mining Industry in Japan*, published by the Bureau of Mines of the Department of Agriculture and Commerce of Japan for the Louisiana Purchase Exposition, 1904.

‡ Crowe "Trade of Japan for the year 1905." *Dipl. and Cons. Reports*, No. 3,675, Ann. Ser., 1905. [Cd. 2,682-270].

§ Forster. "Trade of Hokkaido for the year 1902." *Dipl. and Cons. Reports*, No. 3,030, Ann. Ser., 1903 [Cd. 1386-107], p. 13.

|| Acting-Consul Crowe. "Gold Mines of Formosa." *Dipl. and Cons. Reports*, No. 649, Misc. Ser., 1906 [Cd. 2683-13].



## JAPAN—continued.

important oilfields are situated in Echigo on the west coast of Japan. The output of petroleum from the latter in 1904 was 1,560,000 cases, and in 1905, 2,760,000 cases.\*

*Salt.*—The salt is mainly obtained by the process of evaporation of sea water at various places along the coast. The island of Formosa exported 22,411 tons in 1905. A number of new salt-fields were opened in 1904, but owing to the prevalence of much rain in 1905, the salt harvest was a bad one.†

*Sulphur.*—Owing to the volcanic nature of the country Japan has very rich deposits of sulphur. The mineral is principally worked in Rikuchu and in Hokkaido.

TABLE 482.

PERSONS EMPLOYED at MINES and MINERAL WORKINGS during the Years 1904 and 1905.‡

Kind of Workings.	Persons Employed in the Year.	
	1904.	1905.§
Coal Mines ... ..	88,330	78,477
Metal Mines ... ..	69,133	69,332
Other Non-metallic Mines ...	7,395	6,773
Placer Mining ... ..	5,829	5,134
Total ... ..	170,687	159,716

TABLE 483.

QUANTITY and VALUE of MINERALS and METALS produced during the Years 1904 and 1905.‡

Mineral or Metal.	1904.		1905.§	
	Quantity.	Value.	Quantity.	Value.
Antimony, crude	Metric Tons. 104	£ 1,223	Metric Tons. 96	£ 1,452
„ refined	321	7,152	190	6,197
Arsenic (metal) ... ..	4	46	8	101
Asphalt ... ..	544	145	644	192
Coal ... ..	10,723,796	2,921,813	11,542,041	3,986,666
Copper (metal) ... ..	33,187	1,797,926	33,715	2,240,876
Gold (Fine) (a) ... ..	Kilos, 2,765	368,069	Kilos 2,989	387,159
Graphite ... ..	216	3,709	187	3,091
Iron, pig ... ..	38,143	141,343	48,378	226,672
„ pyrites ... ..	24,886	5,309	25,569	6,847
„ vitriol ... ..	630	1,261	4	54
Lead (metal) ... ..	1,803	23,623	2,255	29,073
Manganese ... ..	4,324	3,604	11,162	8,546
Mercury ... ..	—	81	—	78
Ochre ... ..	174	157	21	50
Peat ... ..	48,268	6,806	50,895	7,979
Petroleum, crude ... ..	Litres 195,207,245 } Metric tons 150,159 }	277,643 }	Litres 215,842,909 } Metric tons 166,033 }	295,390 }
Phosphoric ore ... ..	13	16	243	675
Salt ... ..	701,965	997,133	Not stated.	—
Silver (metal) ... ..	Kilos, 61,339	227,691	Kilos, 82,981	310,372
Sulphur ... ..	25,587	57,144	24,419	53,360
Tin (metal) . ... ..	25	2,607	26	3,322
Total value ... ..	—	6,844,501	—	7,568,152

\* Crowe "Trade of Japan for the year 1905." *Dipl. and Cons. Reports*, No. 3673, Ann. Ser., 1905. [Cd. 2682-200.]

† Consul Wileman, "Trade of the Consular District of Tainan (South Formosa) for the year 1905." *Dipl. and Cons. Reports*, No. 3,706, Ann. Ser., 1906 [Cd. 2,682-231].

‡ *Twenty-first Statistical Report of the Department of Agriculture and Commerce of Japan*; Tokyo and Osaka, 1906; and General Information relating to the Mining Industry in Japan, published by the Bureau of Mines, 1906, and Return furnished by the Department of Agriculture and Commerce, Tokyo.

§ Preliminary figures, and subject to correction.

(a) Not including the output of Formosa.

JAPAN—continued.

TABLE 484.

ACCIDENTS at MINES during the Years 1904 and 1905.\*

Kind of Mines.	1904.		1905.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Coal ... ..	189	2·14	256	3·26
Metal ... ..	68	0·99	71	1·02
Other Non-metallic ... ..	10	1·35	4	0·59
Total ... ..	267	1·62	331	2·07

Of the 256 persons killed by accidents at coal mines in 1905, 110 deaths were caused by "falls of ground," and 32 deaths by explosions of firedamp or coal dust.

Java. (See DUTCH EAST INDIES.)

Johore.†

Gold has been found in one or two places, and a mine is being worked near Mount Ophir, in the Province of Muar. The country is rich in iron ore, but the mineral is not worked. Important deposits of tin have been discovered in several places, and a considerable amount of tin mining is now carried on in the Ulu Johore districts, and some at Bukit Mor, and Dinding.

Liberia.‡

Very little is known about the mineral resources of this Republic owing to its unexplored state. In parts of Western Liberia quartz is known to exist, but no gold-bearing reef of any value has, so far, been traced. Iron is worked by the natives. Mica is reported to have been found towards Central Liberia, and on the eastern side corundum was discovered by the Chartered Company in 1904. Amongst other minerals which are stated to exist in the country are monazite, zinc ore, copper and iron pyrites, laterite, diorite, and granite. It is rumoured that diamonds have been found, but no geological formations have, so far, been discovered which would be likely to contain these precious stones.

Lourenço Marques. (See PORTUGUESE EAST AFRICA.)

Luxemburg.

The only important mineral production of the Grand Duchy of Luxemburg is iron ore. On account of the commercial connection of Luxemburg with Germany, the returns of the mines are given in the German Mineral Statistics, and will be found under "German Empire."

\* Twenty-first Statistical Report of the Department of Agriculture and Commerce of Japan, Tokyo and Osaka, 1906; General Information relating to the Mining Industry in Japan, published by the Bureau of Mines, 1906; and Return furnished by the Department of Agriculture and Commerce, Tokyo.

† The Singapore and Straits Directory for 1906. Singapore, 1906, p. 354.

‡ Consul Braithwaite Wallis, "Trade of Liberia for the year 1906." Dipl. and Cons. Reports, No. 3,750, Ann. Ser., 1907, [Cd. 3283], p. 16.



**Madagascar.\***

The mineral wealth of the island appears to be great. In addition to gold, which is found in alluvial deposits widely spread over the island, the ores of antimony, copper, iron and tin are said to be abundant, to say nothing of asphalt, coal, and petroleum.

Deposits of alluvial gold have been discovered in the valley of the Ampoasary, a tributary of the Mananjary river, about 40 miles east of the town of Ambositra. The auriferous gravel is washed in pans by the natives, of whom about 3,000 are at work; it is, however, expected that reef mining will in the next few years supersede the present primitive methods of gold extraction.

In 1905 several syndicates were formed in the Transvaal to acquire properties in the island and in July some Rand mining experts visited it, but their reports on its mineral wealth were unsatisfactory.

The output of gold shows a decrease in 1905. The quantity produced was 2,370 kilos (76,197 ozs.), valued at £286,804, as against 2,641 kilos (84,910 ozs.), valued at £316,995 in 1904.

Ten tons of iron ore were obtained from a small working in 1905.

The Mining Law of 20th February, 1902, was amended in November, 1905. Amongst other provisions the charge for a prospecting permit has been reduced from £4 to £1.

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**Mexico.†**

Many minerals are obtained in Mexico, and the value of the ores, &c., exported represents about 60 per cent. of the total value of the exports from the country. Mexico is the greatest silver-producing country in the world, and as regards copper she ranks second, and for gold fifth among the nations. The introduction of modern machinery and the closer attention which the resources of the country are receiving from foreign capitalists have had a marked effect on the output in 1905.

*Asphalt.*—Deposits of asphalt have been worked for many years near Tamiahua in the State of Vera Cruz.‡

*Coal.*—Various coalfields have been discovered, and no doubt will gradually become of great value to the Republic. At present the annual output is about 700,000 tons, which is obtained by three companies, the Coahuila, the Sabinas, and the Mexican.§ Native coal is used on some of the railways. About 60,000 tons of coke are produced annually.

*Copper.*—The most important copper mines in Mexico are at Boleo, Lower California, at Cananea, Sonora, and at Fezintlan, Puebla, and also in the states of Michoacan, Durango, and Guerrero. The enormous development of mines in the copper-producing districts in 1905 has caused a corresponding increase in the exports of copper.

*Gems.*—Opals|| are mined extensively in the State of Queretaro.

*Gold.*—The precious metal is found in many of the provinces, but especially in Chihuahua Sonora, Sinaloa, Guerrero, Sonora, Oaxaca, and Lower California.

*Iron.*—Rich deposits exist in various parts of Mexico. The principal blast furnaces are at Monterrey in the State of Nuevo Leon.‡

*Lead Ore.*—The quantity exported in 1905 amounted to 101,197 metric tons.

*Marble.*—The so-called "Mexican onyx" is a handsome marble, obtainable in large blocks, and much prized for decorative purposes.

*Petroleum.*—Sinking operations for petroleum are being carried on at Ebano, near Tampico, and also at Lavin in the State of Tamaulipas.‡

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\* MS. communication to Foreign Office, 5 July, 1900, Consul Porter. "Trade of Madagascar for the Year 1905." *Dipl. and Cons. Reports*, No. 3671, Ann. Ser., 1906 [Cd. 2682-196]; *Statistique de l'Industrie Minière en France et en Algérie pour l'année 1905*, and *Statistiques Coloniales pour l'année 1905*, published by the French Colonial Office, 1906.

† Information furnished by the Ministry of Finance, Mexico, and Romero, *Geographical and Statistical Notes on Mexico*. New York and London, 1898, pp. 13-27, and Sellerier, *Data referring to Mexican Mining*. Mexico, 1901, and Consul Leay "Trade of the Consular District of Vera Cruz for the year 1904." *Dipl. and Cons. Reports*, No. 3,503, Ann. Ser., 1905 [Cd. 2682-28].

‡ Consul Jerome, "Trade of the Consular district of Mexico for the year 1903." *Dipl. and Cons. Reports*, No. 3,285, Ann. Ser. 1904 [Cd. 2236-29], and *Ibid.* for 1904, No. 3,429 [Cd. 2236-173].

§ Consul Leay, "Trade of Consular District of Vera Cruz for the year 1903." *Dipl. and Cons. Reports*, No. 3,262, Ann. Ser., 1904 [Cd. 2236-6], p. 14.

|| Kunz, "Gems and precious stones of Mexico." *Trans. American Inst. Min. Eng.*, 1901.

MEXICO—continued.

*Silver.*—Mexico now produces over 42 per cent. of the world's output of silver. In 1881 the production of the Republic in ounces was 23 millions, in 1891, 33 millions, in 1901, 57½ millions, and in 1905, 75½ millions. The principal mining districts are in the States of Guanajuato, Zacatecas, San Luis Potosi, and Hidalgo.

TABLE 485.  
PERSONS EMPLOYED at MINES during the Years 1903 and 1904.\*

Year	Men.	Women.	Boys.	Total.
1903 ... ..	73,015	796	4,278	78,089
1904 ... ..	78,160	364	2,844	81,368

TABLE 486.  
VALUE of MINERALS exported during the Years 1904 and 1905.\*

Mineral.	1904.		1905.	
	Quantity.	Value †	Quantity.	Value †
	Metric Tons.	\$	Metric Tons.	\$
Antimony ore ... ..	81	1,383	57	15,683
Antimony ... ..	1,694	813,211	1,978	960,690
Asphalt ... ..	92	13,314	859	18,512
Coal (Estimated output) (a) ... ..	700,000‡	8,500,800§	700,000‡	9,228,169§
Copper and Copper ore ... ..	105,703	27,884,664	149,174	31,258,579
Gold ... ..	Kilos. 17,518	25,842,563	Kilos. 23,599	31,793,841
Graphite... ..	970	94,871	970	85,831
Iron and Iron ore ... ..	100	1,844	1,261	37,906
Lead and Lead ore ... ..	95,011	5,076,395	101,197	5,590,956
Marble ... ..	964	175,602	742	79,728
Precious stones... ..	—	475	—	—
Salt ... ..	156	5,443	214	12,682
Silver ... ..	Kilos. 1,599,619	65,448,426	Kilos. 2,348,531	93,609,258
Zinc ore ... ..	2,205	32,146	9,772	169,974
Minerals not specified... ..	—	7,137	—	197,998
Total value in \$ ... ..	—	133,898,274	—	173,059,807
„ „ £ ... ..	—	£13,389,827	—	£17,305,981

(a) The quantities exported in 1904 were 125 tons valued at £151, and 497 tons valued at £655 in 1905.

\* Official Return furnished by the Ministry of Finance, Mexico.  
† The values are given in silver dollars and calculated at 10 dollars = £1.  
‡ These figures represent the approximate annual output of coal.  
§ Estimated on the value of the quantity exported.  
|| In Part IV. for 1904 the value was given in gold dollars.



## MEXICO—continued.

TABLE 487.

DEATHS from ACCIDENTS at MINES during the Years 1903 and 1904.\*

Year.			Number of Deaths.	Death-rate per 1,000 Persons Employed.
1903	...	...	308	3.94
1904	...	...	229	2.81

*Legislation.*—On the 25th March, 1905, the President of the Republic issued a law modifying the taxes on the mining industry and on gold and silver refineries established in the Republic. Two Decrees, dated the 19th June and 24th November, 1905, respectively, modifying the stamp tax referred to in Article 4 of the law, and two supplementary Decrees dated the 17th January and 9th February, 1906, specifying the conditions which must be complied with by refineries in order to obtain re-imbursement of taxation, have since been issued †

## Morocco.‡

*Copper.*—In the beginning of the sixties copper ore was still being worked near Tarudant, the capital of the province of Sus. The ore is likewise found in the Tangier region.

*Fuller's Earth.*—The quantity of Fuller's earth exported from Tangier and Laraiche was 175 tons in 1904, valued at £145, and 210 tons in 1905, valued at £690, and in the latter year £60 worth from Tetuan.§

*Gold.*—Silver and gold are said to occur in the province of Sus.

*Iron.*—It is probable that the Carthaginians worked the old iron mines, of which remains exist at Djebel Hadid, 14 miles N.E. of Mogador.

*Salt.*—Morocco is rich in salt. Some is found in the beds of dried-up lakes in summer. Rock salt is obtained in the Atlas Mountains, near Demnat; and at Rabat and elsewhere sea water is evaporated by the heat of the sun.

### Netherlands and its Colonies. (See HOLLAND, DUTCH EAST INDIES, AND DUTCH WEST INDIES.)

### New Caledonia.||

The varied rich mineral deposits of New Caledonia have as yet hardly been touched owing to want of outside enterprise and capital.

*Chromic Iron.*—The island produces more chromic iron than any other country except Turkey, and the output in 1905 of 76,933 tons form a record. The quantity of ore exported during the year was 51,374 tons, and gives 50 to 54 per cent. of chromium oxide. The deposit of ore at Tiebagi on the north-west of the island is one of the most valuable yet known, one mine alone (Tiebagi mine) furnished nearly 59,000 tons.

\* Official Return furnished by the Ministry of Finance, Mexico.

† Despatches received at the Foreign Office from H.M. Minister at Mexico.

‡ Fischer, "Die Bodenschätze Maroccos," *Zeitschr. f. prakt. Geologie*. Vol. VIII., 1900, Part 4, p. 110.

§ Vice-Consul Smith, "Trade of Consular District of Tangier for the year 1905." *Dipl. and Cons. Reports*, No. 3,597, Ann. Ser. 1096 [Cd. 2682-122].

|| Information furnished by the French Government: Consul Brophy, "Trade of New Caledonia for the year 1905." *Dipl. and Cons. Reports*, No. 3,548, Ann. Ser. 1906 [Cd. 2682-73], and *Statistiques Coloniales pour l'année, 1905*, published by the French Colonial Office, 1906.

NEW CALEDONIA—continued.

*Coal.*—The presence of coal at several places in this Colony has been established, and a company has commenced working the deposits with some success at Nondoue near Noumea.

*Cobalt Ore.*—6,081 tons of ore were produced in 1905, containing about 3 to 4 per cent. of metal; a decrease of 2,920 tons as compared with the output of 1904. The decrease is attributed to the discovery of other sources of supply in Canada and elsewhere.

*Copper Ore.*—The deposits of copper ore carrying a considerable admixture of zinc, tin, lead, silver, &c., were formerly worked at the north end of the island, but since 1903, when only 9 tons of copper ore were obtained, none has been produced. A company has, however, been formed in Australia to re-work them in connection with some nickel mines.

*Gold.*—Slight traces of gold have been discovered, but not in any paying quantity.

*Nickel Ore.*—The figures for nickel ore in Table 489 show a considerable increase in 1905 compared with the previous year, and is principally due to the output from mines at Nepoui and Voh on the west coast. The ore, which is all quarried, yields from 6 to 8 per cent. of metal.

*Phosphates.*—It is asserted that there are phosphate deposits near Noumea, but the only phosphates exported up the present have been obtained at Surprise Island, a small islet some 75 miles to the north-west of New Caledonia.

TABLE 488.  
PERSONS EMPLOYED at MINES during the Years 1904 and 1905.

Year.				White.	Coloured.	Total.
1904	...	...	...	1,526	1,247	2,773
1905	...	...	...	1,401	1,427	2,828

TABLE 489.  
QUANTITY and VALUE of MINERALS produced during the Years  
1904 and 1905.

Mineral.	1904.*		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Chrome ore ... ..	47,247	2,008,000	76,933	3,846,650
Cobalt ore ... ..	9,001	1,260,000	6,081	912,184
Nickel ore ... ..	81,879	1,842,300	111,790	2,235,800
Total value in francs ... ..	{ 5,110,300		{ 6,994,634	
„ „ „ £ sterling	{ £204,412		{ £279,785	

Nicaragua.†

The whole of the eastern side of the Cordillera mountains is stated to be very rich in minerals. Most of the gold exported in 1903 was obtained from that locality. Coal, copper, oil, and precious stones are to be found in the Republic, but at present the

\* These figures relate to production, whereas those given in Part IV. for 1904 relate to exports.  
† Consul Chambers, "Trade of Nicaragua for the Year 1902." *Dipl. and Cons. Reports*, No. 2,963, Ann. Ser., 1903 [Cd. 1386-40], and Consul Bingham. *op. cit* for 1903-4, No. 3337 [Cd. 2236-81], 1905.



NICARAGUA—*continued.*

mining industry is much retarded by the scarcity of labour, of water, and means of communication. The exact output of the mines and alluvial diggings does not appear to be known.

Salt is obtained on the Pacific coast by the evaporation of sea water, but the amount of production cannot be ascertained. In 1903, 545 metric tons, valued at £2,241, were exported to the neighbouring Republics of Honduras, Salvador and Guatemala.

The exports of gold and gold ore for the years 1902 and 1903 are given in the table below.

TABLE 490.

VALUE of GOLD exported during the Years 1902 and 1903.

Mineral.				1902.	1903.
				£	£
Gold (bars and dust)	...	}		96,870	114,366
Gold ore	... ..				

## Norway.\*

Norway is far less important as a mining country than Sweden.

*Apatite.*—This mineral was worked on a large scale some years ago at Oedegaarden, but the output is now comparatively small.

*Copper.*—Copper ore and pyrites are the chief metallic products of Norway. They are produced by various mines, among those of which may be mentioned Røros, and Sulitelma. The output in 1905 shows a considerable increase, and the Sulitelma copper smelting works are being extended.

*Felspar.*—The supply of felspar is derived mainly from veins of pegmatite in Setersdalen in the province of Smaalenene and along the coast between Bamle and Arendal. Quartz and mica are obtained from the same deposits.

*Gems.*—Emeralds are being obtained near Minne, but the production is unimportant.

*Granite.*—Quarries producing granite, syenite, gabbro or porphyry, are worked near Fredrikshald, Frederikstad, Larvik and Drammen. The total value of the granite exported in 1905 is estimated at £131,700.

*Iron Ore.*—Important deposits of iron ore are reported to exist especially in the northern part of the country.

*Infusorial Earth.*—Beds of infusorial earth are worked at different places in the South of Norway.

*Marble.*—Fauske, in Nordland, is the chief marble centre. The quarries are worked on a large scale.

*Molybdenite.*—The deposits of molybdenite are situated near Flekkefjord and Egersund. The ore which is exported to the United Kingdom contains 95 per cent. of molybdenite.

*Nickel.*—At Evje nickel works 4,639 tons of ore were smelted in 1905, producing 78 tons of nickel and 51 tons of copper.

\* Information furnished by the Central Statistical Office, Kristiania, *La Norvège. Ouvrage Officiel publié à l'occasion de l'Exposition Universelle de Paris, 1900.* Kristiania, 1900, p. 795, and Acting Consul-General Gray, "Trade of Norway for the year 1905." *Dipl. and Cons. Reports*, No. 3,555, Ann. Ser. 1906 [Cd. 2682 80].

## NORWAY—continued.

*Silver.*—The Kongsberg mines have long been famous for their native silver, which is sometimes met with in masses of considerable size; the picked stuff sent to the smelting works contains 70 per cent. of the precious metal. The amount of silver obtained by smelting, and derived entirely from Kongsberg, was 8,064 kilos. valued at 575,000 kroner in 1904, and 7,100 kilos. valued at 520,000 kroner in 1905.

*Slate.*—The principal quarries are situated at Valdres, and the quantity of slate exported therefrom in 1905 was 2,036 tons.

TABLE 491.  
PERSONS EMPLOYED at MINES during the Years 1904 and 1905.\*

Kind of Mines.	1904.	1905.
Apatite... ..	?	?
Bismuth ore ... ..	—	6
Chrome ore ... ..	9	—
Copper ore ... ..	2,155	2,607
Felspar... ..	?	?
Gold ... ..	—	—
Iron ore ... ..	196	506
Iron pyrites (in part cupreous) ...	539	838
Manganese ore ... ..	3	—
Molybdenite ... ..	24	62
Nickel ore ... ..	47	45
Rutile ... ..	—	—
Silver and silver ore ... ..	227	230
Zinc and lead ore ... ..	18	219
Total ... ..	3,218	4,513

TABLE 492.  
QUANTITY and VALUE of MINERALS produced from MINES during the Years 1904 and 1905.\*

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Kr.	Metric Tons.	Kr.
Apatite (exported) ... ..	1,456	73,000	2,522	125,000
Chrome ore ... ..	154	3,000	—	—
Copper ore ... ..	36,891	1,725,000	37,045	2,021,000
Felspar (exported) ... ..	20,835	312,000	20,696	279,000
Iron ore ... ..	45,328	403,000†	46,582	433,000
Iron pyrites (in part cupreous) ...	133,603	3,510,000	162,012	4,023,000
Manganese ore ... ..	22	1,000	—	—
Molybdenite ... ..	30	65,000	46	61,000
Nickel ore ... ..	5,352	105,000	5,477	109,000
Silver (fine) ... ..	Kilos. 8,064	575,000	Kilos. 7,100	520,000
Titanium ore (rutile) ... ..	25	10,000	35	15,000
Zinc and lead ore ... ..	42	2,000	4,241	45,000
Total value in Kr.... ..	—	6,784,000†	—	7,632,000
„ „ £ sterling ..	—	£373,600†	—	£420,300

The latest official information about accidents in mines in Norway, published by the State Insurance Office, only relates to the period from 1895–1899, when the number of deaths was 20 and the death-rate 2·25 per 1,000 persons employed.

\* Norges Officielle Statistik, 1906, Kristiania, and Official Return furnished by the Central Statistical Office, Kristiania.

† Corrected figures.



## Panama.\*

The Republic possesses rich deposits of auriferous quartz. The principal mine is Cana in the Darien district, which employs about 1,000 persons. The quantity of gold obtained and shipped to Europe in 1903 was 40,570 ozs. valued at £160,189. Manganese ore was obtained from the Nombre de Dios Mine up to June 1902, but owing to a reduction in the price of the metal the operations had then to be suspended, and have not since been resumed.

## Paraguay.

Though many useful ores and minerals are said to exist in Paraguay, they still remain unworked. Means of transport are greatly lacking in the Republic.

## Persia.†

The minerals of the country belong to the Government, and the mines are leased out to private persons. The Ministry of Mines has no account of the number of persons employed, nor of quantity and value of the minerals produced.

The mineral wealth of Persia is great, though it cannot be properly utilized at the present time owing to want of easy means of communication. Deposits of the following useful minerals are known to exist, viz. :—alum, antimony ore, borax, coal, the ores of cobalt, copper, gold, iron, lead and manganese, petroleum, realgar, salt, saltpetre, silver-lead ore, sulphur, and turquoises.

*Coal and Iron.*‡—There are fine coal deposits near Kerman, and in the province of Khorassan, and much iron ore of good quality on the slopes of the Elburz range and elsewhere.

*Copper.*§—Rich deposits of copper are known. During the year ended March 1904, 8 tons were exported from the Bahrain Islands. The copper mines to the south of Kerman require better means of communication in order to develop them properly. Mines also exist in the Turbat and Sabzawar districts in the province of Khorassan, but no statistics of output of copper are available.

*Lead Ore.*—Argentiferous lead ore is plentiful, but is worked in a primitive fashion.

*Petroleum.*—In the lower valleys of the province of Kermanshah, near the Turkish frontier, there exists a wide oil area extending south from Kerkuk in Turkey to Shuster in Persia, and even to the Island of Hormuz. The principal oil fields are situated in the province of Kermanshah.||

*Salt.*—Some salt is obtained (by the process of evaporation in tanks) from the salt water which collects in the oil wells of the Province of Kermanshah. In the year ended March 1905, 12 tons valued at £25 were exported from Kermanshah.|| 14 tons were exported from Bunder Abbas in 1905.§

*Turquoises.*—The most important mines of Khorassan are the workings for turquoise near Nishapur, the concession for which is sold annually by the Government. The concession for 1905-6 has been sold for £6,034. The mines are not worked in a scientific manner. The value of the gems exported in 1905-6 was £7,201, which is stated to be only about a quarter of the total value of the output of the mines.¶

\* Consul Mallet "Trade of Panama for the year 1903," *Dipl. and Cons. Reports*, No. 3292, Ann. Ser., 1904 [Cd. 2236-36].

† Helmhacker, "The Mineral Resources of Persia," *Eng. Min. Jour.*, Vol. LXVI., 1898, p. 38, and *B. u. h. Zeitung*, Vol. LVIII., 1899, p. 272.

‡ *Berg-und hüt. Zeit.*, Vol. LVIII., 1899, p. 272, and Acting Consul-General Kennion, "Trade of Khorassan for the year 1905-06," *Dipl. and Cons. Reports*, No. 3724, Ann. Ser., 1906 [Cd. 2682-249].

§ Vice-Consul Richards, "Trade of the Persian Gulf for the year 1904," *Dipl. and Cons. Reports*, No. 3408, Ann. Ser., 1905 [Cd. 2236-152]. Consul Sykes "Trade of Kerman Consular District for the year 1904-5," *Dipl. and Cons. Reports*, No. 3374, Ann. Ser., 1905 [Cd. 2236-118]. Consul Shakespear "Trade of Bunder Abbas and Lingah for the year 1905," *Dipl. and Cons. Reports*, No. 3702, Ann. Ser., 1906 [Cd. 2682-227], and *op. cit.*, No. 3724.

|| Consular Agent Rabino "Trade of Kermanshah for the year 1904-5," *Dipl. and Cons. Reports*, No. 3420, Ann. Ser., 1905 [Cd. 2236-164].

¶ Consul-General Sykes, "Trade of Khorassan for the year 1904-5," *Dipl. and Cons. Reports*, No. 3499, Ann. Ser., 1905 [Cd. 2682-24], and *op. cit.*, No. 3724.



## Peru.\*

The number of persons employed in exploiting mines and mineral workings is estimated at 12,861, of which 8,807 are in mines, 3,210 in salt works, and 844 at petroleum wells.

The principal minerals of Peru are borate of lime, coal, copper ore, gold, petroleum, salt, and silver ore.

*Bismuth.*—The only known sources of supply are in the neighbourhood of Cerro de Pasco, and as the owner is a member of the German monopoly the production has been restricted. Some copper mines of the Cerro de Pasco basin produce also some bismuth sulphide.

*Borates.*—Though Borates occur in the Azángaro, Arequipa, Moquegua, Taena, and Parina Cochis districts, the only deposit which is being worked at a profit at the present time is that of Salinas, near the boundary between the provinces of Arequipa and Moquegua.

*Coal.*—All the different varieties of mineral fuel exist in Peru, viz.:—peat, lignite, coal, and anthracite. Lignite is found in the Tertiary rocks on the coast and elsewhere. The true coal and anthracite are found in the Cretaceous and Jurassic rocks in various places, and a solid hydro-carbon, which is neither coal nor anthracite, occurs in veins, and is likewise worked and sold as mineral fuel. There are very large areas of coal in the department of Ancachs, in the Santa Valley, at Jatunhuasi, near Jauja, in the department of Junin, in the neighbourhood of Cerro de Pasco, and in the departments of Huanuco, Cajamarca and Libertad. In 1905 the value of the output amounted to £100,000.

*Copper Ore.*—Rich and enormous bodies of secondary enrichment of copper ore exist in the limestone formation of Cerro de Pasco, and at Huayllay, some 30 miles therefrom, also at Morococha, near Yauli. In the Apacancha and Huaneayo districts of the department of Junin exists true copper lodes yielding more than 12 per cent. of copper and containing silver and a little gold. A branch of the Central Railway has now been made to Morococha which will greatly help the mines in that locality.† With more capital and increased metallurgical plant it is asserted that the annual output of copper should reach over 50,000 tons.

*Gold.*—The provinces which are richest in gold are Sandia, Carabaya, Paucartambo and Pataz. The precious metal has been found in paying quantities in the river beds of the two first-named districts and at Poto. The tributaries of the Inambari river have recently been explored, and terraces of alluvial gold drift have been discovered in the valley of the river Nusiniscats. In the eastern part of Huanuco some river beds have been prospected with good results.

*Iron Ore.*—Deposits of iron ore of inferior quality are known to exist in the department of Piura, and close to the Southern Railway near Lake Titicaca, but little has been done towards developing them. Other deposits have been found close to the Central Railway, near the smelting works of Casapalca, and magnetite has been discovered at Aija, about 60 miles from the Coast, but perhaps the true source of iron ore will in future be found in the eastern slope of the Andes, where the "Campas" Indians have been smelting iron ore for many years.‡

*Lead Ore.*—This mineral is chiefly worked in the department of Junin.

*Molybdenite.*—Several mines containing this mineral exist near Jauja.

*Petroleum.*—The principal places where petroleum is being obtained at the present time are on the coast in the department of Piura, and in the province of Tumbes. The Titicaca Oil Co. recently started boring near Pusi in the province of Huancane, where oil has been struck at a very shallow depth.

*Quicksilver.*—The deposits which exist in the department of Huancavelica were in former years considered to be of great importance. 1,554 kilograms were obtained in 1905.

*Silver Ore.*—This is the principal mineral worked in Peru; the most important mines are at Cerro de Pasco, Hualgayoc, Salpo, Huaylas, Recuay, Cajatambo, Yauli, Huallanca, Huarochiri, Castrovirreyna, Caylloma, Lampa and Puno. The output of silver has

\* Information furnished by the Cuerpo de Ingenieros de Minas del Peru, Ministerio de Fomento, Lima. General St. John, "Trade of Peru for the year 1905," *Dipl. and Cons. Reports*, No. 3635, Ann. Ser., 1906 [Cd. 2682-160]; Denegri "Estadística Minera del Perú en 1905"; *Boletín del Cuerpo Ingenieros de Minas del Perú*, No. 41, Lima, 1906; and Mensaje presentado al Congreso Ordinario de 1906 por el Presidente de la República del Perú, Lima, 1906.

† Masias, "Estado actual de la industria minera de Morococha," *Boletín del Cuerpo de Ingenieros de Minas del Perú*, No. 25, Lima, 1905.

‡ Raimondi. *El Perú*. Vol. III., p. 436.



## PERU—continued.

increased considerably in 1905, and it is expected that the returns for 1906 from Caylloma, Recuay, Cerro de Pasco and Castro Virreyna districts will largely augment the output for that year.

*Salt.*—The production of salt is a Government monopoly. 24 per cent. of the output is exported and the remainder is consumed locally for domestic and industrial purposes. It is found in abundance in Peru, and occurs in various ways. There are deposits on the coast at Sechura, Huacho, Otuma, Moquegua, &c. In the Andes the salt beds of San Blas are worked on a large scale, and in eastern Peru there is the famous Cerro de la Sal.

*Sulphur.*—Sulphur is found on all the volcanoes of the Andes in considerable quantities, besides occurring in sedimentary deposits near Bayobar in the department of Piura, but the owners of the latter are unable to properly treat it owing to the difficulty of separating it from sand during extraction. There are also sulphur deposits at Combayo in the department of Cajamarca.

*Vanadium Ore.\**—About 30 miles to the north-west of Cerro de Pasco a true lode of vanadium sulphide has been discovered, and the ore is stated to yield 30 per cent. of vanadic acid. The deposit is from 6 to 12 feet thick, and is being actively developed.

*Wolframite.*—This mineral is obtained from a mine in the province of Tayacaja in the department of Huancavelica.

TABLE 493.

QUANTITY and VALUE of MINERALS produced during the YEARS 1904 and 1905.

Mineral.	1904.†		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Bismuth ... ..	—	—	12	5,000
Borates ... ..	2,675	24,079	1,954	17,586
Coal ... ..	59,920	89,880	75,338	100,000
Copper (fine) ... ..	9,504	504,604	12,213	725,301
Gold (fine) ... ..	Kilos. 601	75,102	Kilos. 777	106,062
Lead (metal) ... ..	2,209	8,637	1,476	6,107
Nickel ... ..	—	—	Kilos. 1,778	258
Petroleum (crude) ... ..	38,683	87,037	49,700	116,795
Quicksilver ... ..	—	—	Kilos. 1,554	340
Salt ... ..	18,545	18,545	21,039	21,038
Silver (fine) ... ..	Kilos. 145,165	530,875	Kilos. 191,476	729,444
Sulphur ... ..	21	80	—	—
Total Value ... ..	—	1,338,839	—	1,828,531

The Mining Regulations of Peru are contained in a Code issued in 1903.‡

## Philippine Islands.§

A map of the Philippines showing the localities of the various mineral deposits is published in the Sixth Annual Report of the Mining Bureau. It is stated in the Report that prospecting and development work was carried on during the year in Lepanto-Bontoc, Benguet, Pangasinan, Nueva Ecija, Bulacan, Rizal, Batangas, Tayabas, the Camarines, Albay, Masbate, Cebu and Mindanao.

*Coal.*—Coal and lignite are found on many of the islands, and sufficient mining has already been done in the Danao and Compostela coal-fields of Cebu to prove the value of the deposits there. The thickness of the coal seams varies from a few inches to 18 feet. A separate report on the coal deposits of Batan Island, stating that the coal is of a bituminous character, and of Tertiary Age, was published in 1905.||

\* J. J. Bravo. *Boletín de la Sociedad de Ingenieros*. N.º 1906.

† Revised figures.

‡ Castro, "Código y Vocabulario de Minería," Nueva Legislación Peruana, Tomo VII., Lima, 1903.

§ McCaskey, "Sixth Annual Report of the Mining Bureau for the year ending 31st August, 1905," Manila, 1905.

|| Warren D. Smith, "Bulletin No. 5, The Mining Bureau of the Department of the Interior," Manila, 1905.



PHILIPPINE ISLANDS—*continued.*

*Copper.*—Copper ore occurs in many of the islands, but the most important deposits are those of Suyoc and Mancayan in Northern Luzon. The ores of the latter are reported to contain from 9.7 to 32.9 per cent. of copper.

*Gold.*—Large quantities of gold have been extracted from alluvial deposits and quartz veins, and there appears to be a promising future for hydraulic and dredger mining in the Camarines, in Masbate, and in Mindanao, and for vein mining in Lepanto, Benguet, the Camarines, Masbate, and Mindanao. In Masbate work has been done upon 60 or more claims; and upon 20 gold placer claims on the Lanan and Guinabatan Rivers.

*Iron.*—Magnetite and hæmatite are found in Abra Province, in San Miguel and Angat, in Boso-boso, Rizal and in the Camarines.

*Lead.*—The ore of this metal is found in Bontoc, Marinduque, the Camarines, Luzon, Cebú, and Panay.

*Manganese.*—Some rich manganese ore has been discovered in the island of Masbate.

*Petroleum and Natural Gas.*—Mineral oil exists in Cebú, Panay, Guimaras, Mindanao, and Leyte, and a considerable quantity is obtained by crude methods of working. Cebú has likewise natural gas.

*Quicksilver.*—According to the reports of prospectors, there are deposits of quicksilver in the Camarines, in Panay, in Masbate, in Zambales, and in Mindoro on the east coast.

*Salt.*—Large beds of rock salt are believed to exist in the mountains of Nueva Vizcaya.

*Silver.*—The only silver found at present is either in the form of argentiferous galena or alloyed with the gold.

*Tin Ore.*—Tin and tungsten ores have been found in North-Western Negros.

Stone for building, and various kinds of clay are found in abundance throughout the islands.

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Porto Rico.\*

The island of Porto Rico possesses valuable mineral resources, but owing to want of capital no *bona fide* mining was carried on during 1905.

*Coal.*—Coal has been found in the western part of the island and at Guatemala.

*Copper.*—The ores of copper are found in several places.

*Gold.*—About 12 kilos. of gold, valued at from six to eight thousand dollars, are panned out annually from the beds of creeks and rivers. Prospecting for gold was continued during 1905 in the Corozal and Luquillo districts, and a hydraulic plant was installed.

*Gypsum.*—This mineral is common.

*Iron Ore.*—There are valuable deposits of iron ore, especially north of Juncos. The iron deposits in the eastern portion of the island have been inspected with a view to future development.

*Lignite and Peat.*—These two minerals occur in many places.

*Phosphate of Lime.*—Phosphate rock is everywhere abundant. It has been worked on the islet of Mona, in the San Domingo Channel, and about 9,000 tons were exported to Europe in 1894.

*Salt.*—Rich deposits of salt are known in several places.

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Portugal.†

According to a Consular report‡ the South of Portugal is rich in minerals, particularly copper and iron, but, as most of the mines are situated a long distance from a railway and are unapproached by roads, very few are being worked. The official statistics omit all mention of the marble, slate, and other stone quarried in the country.

\* Day, "Mineral Resources of the Antilles, Hawaii and the Philippines," *Eng. Mag.*, Vol. XVII., 1899, p. 242.—"Zur Geologie der Insel Mona in West Indien," *Berg- und hüttenmännische Zeitung*, Vol. LVIII., 1899, p. 337.—Domerech "Porto Rico; her Mineral Resources," *Mines and Minerals*, Vol. XIX., 1899, p. 529, Consul Churchward, "Trade of Porto Rico for the year 1904," *Dipl. and Cons. Reports*, No. 3379, Ann. Ser., 1905 [Cd. 2236-123]; and for 1905, No. 3636 [Cd. 2682-161].

† Official Return furnished by the Portuguese Government.

‡ "Trade of South Portugal for the year 1903," *Dipl. and Cons. Reports*, No. 3178, Ann. Ser., 1904 [Cd. 1766-112].



PORTUGAL—continued.

*Asphalt.\**—There are large deposits of this mineral near Alcoba.

*Antimony Ore.*—The principal antimony mines are in the commune of Gondomar, in the Porto district ; the ore likewise occurs in the Braganza district.

*Copper.*—The deposit of copper-bearing pyrites at San Domingos, in Southern Portugal, furnishes most of the mineral wealth of the country at the present time, but there is also an important mine at Aljustrel,\* producing cupreous iron pyrites.

*Gold.\**—Auriferous quartz exists in the districts of Coimbra, Evora, Beja, Faro and Porto, and alluvial gold has been found in the neighbourhood of Lisbon, Santarem, Castello Branco and Coimbra.

*Iron Ore.\**—Rich deposits of iron ore exist, which it is expected will some day become a source of considerable wealth. The principal iron mines now worked are those near Beja and Evora, and in the district of Braganza at Moncorvo.

*Lignite.\**—This mineral fuel abounds near Coimbra, Leiria and Santarem.

*Marble.*—Though the country cannot boast of treasures of white statuary marble like that of Carrara, it possesses many beautiful varieties of the stone.

*Slate.*—There are slate quarries at Valongo which are worked by an English company. They produce large slabs for billiard tables, tanks, and cisterns. The quantity exported in 1902 from Oporto was 16,000 tons.†

*Tin Ore and Wolfram.*—These minerals occur in the Vianna do Castello, Braga, Vizeu, Villa Real, Braganza and Guarda districts.

TABLE 494.  
PERSONS EMPLOYED at MINES during the Years 1904 and 1905.

Kind of Mines.	Under-ground.	Above-ground.			Total Under and Above Ground.
	Total Males.‡	Males.	Females.	Total.	
Coal ... ..	124	194	290	484	608
Iron ore .. ...	—	—	—	—	—
Other mines ... ..	2,132	2,182	243	2,425	4,557
Total for 1905 ...	2,256	2,376	533	2,909	5,165
Total for previous year ...	1,859	1,908	201	2,109	3,968

TABLE 495.  
PERSONS EMPLOYED at QUARRIES during the Year 1890.§

Under-ground.			Above-ground.			Total Under and Above Ground.
Males.	Females.	Total.	Males.	Females.	Total.	
419	—	419	4,240	57	4,297	4,716

\* "Trade of South Portugal for the year 1903," *Dipl. and Cons. Reports*, No. 3178, Ann. Ser., 1904 [Cd. 1766-112].  
† Acting Consul Grant, "Trade of Northern Portugal for the year 1902," *Dipl. and Cons. Reports*, No. 3064, Ann. Ser., 1903 [Cd. 1386-141], p. 11.  
‡ No females are employed below-ground.  
§ No later return available.

PORTUGAL—continued.

TABLE 496.

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Milreis.	Metric Tons.	Milreis.
Antimony ore ... ..	—	—	84	4,186
Arsenic ... ..	1,370	54,526	1,562	53,907
Arsenical pyrites ... ..	—	—	20	140
Coal (Anthracite) ... ..	12,805	31,222	11,449	30,218
Copper precipitate ... ..	1,757	268,351	2,148	322,431
Cupreous pyrites ... ..	297	15,189	210	9,574
Cupreous iron pyrites ... ..	383,581	797,940	352,479	658,635
Gold (fine) ... ..	Kilos. 1·3	940	Kilos. 4·2	2,275
Gold and Antimony concentrates ... ..	81	2,802	—	—
Iron ore ... ..	12,488	14,841	3,200	3,840
Iron pyrites ... ..	225	4,394	—	—
Lead ... ..	50	948	291	6,096
Tin ore ... ..	37	10,883	20	6,146
Tin (Metal) ... ..	14	8,400	—	—
Wolfram... ..	358	159,046	290	92,049
Zinc, Copper and Lead ore ... ..	180	1,700	—	—
Total value in milreis ... ..	—	1,371,182	—	1,189,497
„ „ £ sterling ... ..	—	£304,707*	—	£264,333

TABLE 497.

DEATHS from ACCIDENTS at MINES during the Years 1904 and 1905.

Kind of Mines.	Under-ground.			Above-ground.			Total Under and Above Ground.	Death-rate per 1,000 Persons Employed.
	Males.	Females.	Total.	Males.	Females.	Total.		
Coal ... ..	—	—	—	—	—	—	—	—
Iron ore ... ..	—	—	—	—	—	—	—	—
Other mines ... ..	2	—	2	—	—	—	2	·44
Total for 1905 ... ..	2	—	2	—	—	—	2	·39
Total for pre- ceding year }	3	—	3	—	—	—	3	·76

Portuguese East Africa.

Coal, gems, gold, and petroleum are said to have been discovered in the district of Lourenço Marques,† and coal on Inyack Island close to Delagoa Bay. Coal has also been found on the Catembe River, some 40 miles from Lourenço Marques, and much prospecting is going on. Coal of moderate quality abounds at Tete, which will prove of great value in the working of gold mines in the vicinity.‡

In addition to large auriferous deposits, in connection with which many ancient workings can be distinctly traced, copper and coal are known to exist in the North of the Zambesi. Annexed to the report of Acting Vice-Consul Bowhill§ is a map showing

\* Calculated at the rate of 4·5 milreis = £1 sterling.  
† *Zeitschr. f. prakt. Geol.*, 1899, p. 267. Despatch from H.M. Minister at Lisbon to Foreign Office. Consul Ross, "Trade of Lourenço Marques and District for the year 1898." *Dipl. and Cons. Reports*, No. 2235, Ann. Ser., 1899 [C. 9044-61], and Consul-General Baldwin, "Trade of Lourenço Marques for the year 1905." *Dipl. and Cons. Reports*, No. 3666, Ann. Ser., 1906 [Cd. 2682-191].  
‡ Vice-Consul Wallis, "Report on the Trade of Tete and District for the year 1903." *Dipl. and Cons. Reports*, No. 3210, Ann. Ser., 1904 [Cd. 1766-144], pp. 4 and 5.  
§ "Trade of Chinde for the year 1903." *Dipl. and Cons. Reports*, No. 3211, Ann. Ser., 1904 [Cd. 1766-145], and Vice-Consul Hewitt-Fletcher. "Trade of Chinde, for the year 1905." *Dipl. and Cons. Reports*, No. 3721, Ann. Ser., 1906 [Cd. 2682-246].



## PORTUGUESE EAST AFRICA—continued.

the localities of the gold, copper, and coalfields in Zambesia. The development of the gold mines at Chifumbase and Missale, situated about 150 miles north-west of Tete is being actively pushed forward.\*

According to Consul Maugham,† the gold mining industry in the Beira district is showing signs of reviving animation. In Manica the number of stamps at work in 1905 was 18, and the gold exported amounted to 2,139 ozs., valued at £7,198. During the year, 89 prospecting licences were issued as compared with 33 in 1904.

It is reported that the precious metal has also been discovered in the southern portion of the Province of Angoche.

221 tons of copper ore were obtained from the Manica district during the year 1905, the metallic contents of the ore being estimated at 17 per cent.†

Prospecting operations have discovered indications of oil-bearing soil near Inhambane and at Nhangella in the Lourenço Marques district,‡ and borings are now being made to ascertain whether oil exists in payable quantities.

Regulations for the prospecting, concession and working of precious metals and mines in general within the territories of Manica and Sofala under the administration of the Companhia de Mocambique were approved by Decrees of the 14th July, 1904, and 16th November, 1905.§

## PORTUGUESE NYASSALAND.||

Portuguese Nyassaland possesses large deposits of coal and the ores of iron, gold, and silver. The ores of copper, nickel, and zinc have been discovered, besides graphite, marble, mica, and slate.

*Coal.*—There are two known coalfields—one within a few miles of the natural harbour afforded by Pemba Bay, the other around Itule, on both sides of the Lugenda River.

*Iron.*—Magnetic ore occurs over a considerable area just west of the Pemba coalfield, and is smelted on a small scale by the natives.

*Gold.*—The principal known gold region is the district about the Rarico River, a tributary of the Lugenda.

*Mica.*—This mineral is reported to exist in considerable quantities in the territories of the Nyassa Company.

## Portuguese West Africa.¶

Angola is said to contain numerous deposits of copper ore. The Katanga mines in the district of Lake Tanganika, into which the Benguella Railway is about to penetrate, are reputed to be rich in copper. Gold has been found near Mossamedes and on the Quanza River.

## Prussia. (See GERMAN EMPIRE.)

## Roumania.\*\*

The minerals worked in Roumania are lignite, petroleum, rock salt, and stone.

*Lignite.*—Lignite is found in very many parts of the country, and the beds are sometimes as much as 20 feet thick; but lignite mining is at present in its infancy. The largest mines are at Margineanca, and are worked by the State; they produce about 51,000 tons yearly.

*Petroleum.*—The petroleum industry in Roumania is steadily developing. The total production of crude oil in 1905 was 611,356 metric tons, or double that of four years ago. The oil-bearing regions are shown on maps in the reports of M. Rommenhöller and Mr. Sutherland.†† The illustrated pamphlet of the latter author affords an excellent

\* "Trade of Chinde for the year 1903." *Dipl. and Cons. Reports*, No. 3211, Ann. Ser., 1904 [Cd. 1766-145], and Vice-Consul Hewitt-Fletcher. "Trade of Chinde for the year 1905." *Dipl. and Cons. Reports*, No. 3721, Ann. Ser., 1906, [Cd. 2682-246].

† "Trade of Beira for the year 1905." *Dipl. and Cons. Reports*, No. 3563, Ann. Ser., 1906 [Cd. 2682-93].

‡ *Zeitschr. f. prakt. Geol.*, 1899, p. 267. Dispatch from H.M. Minister at Lisbon to Foreign Office. Consul Ross, "Trade of Lourenço Marques and District for the year 1898." *Dipl. and Cons. Reports*, No. 2235, Ann. Ser., 1899 [C. 9044-61], and Consul-General Baldwin, "Trade of Lourenço Marques for the year 1905." *Dipl. and Cons. Reports*, No. 3666, Ann. Ser., 1906 [Cd. 2682-191].

§ An English translation of the regulations is issued by the Mozambique Company, Macequece.

|| Worsfold, "Portuguese Nyassaland," London, 1899. *Handbook of the Nyassa Company*, London, 1898, p. 30, and information furnished by The Nyassa Company.

¶ Consul Mackie, "Trade of Angola for the year 1905." *Dipl. and Cons. Reports*, No. 3704, Ann. Ser., 1906, [Cd. 2682-229].

\*\* Alimanestiano, "L'Exploitation des Mines en Roumanie." *Courrier de Roumanie*, Nos. 4, 5, and 6; Bucharest, 1898-99; and "Der Bergbau Rumäniens," *Allgemeine bergmännische Zeitschrift*, No. 5, 1899, p. 16; *Le sous-sol de la Roumanie*, 1900, and Crémer, *Richesse Minérale de la Roumanie*, 1900.

†† Rommenhöller, *La Roumanie*, Rotterdam, 1898, and "The Petroleum Industry of Roumania," reprinted from the *Petroleum Review*, April 1899.

ROUMANIA—continued.

account of the petroleum industry. The mineral is obtained partly from shallow hand-dug wells and partly from bore-holes. The principal petroleum centres are Prahova, Bacan, Buzen and Dambovitza ; over 92 per cent. of the production in 1904 was from the Prahova district. In 1904 there were 224 productive bore-holes and 744 productive wells. The deepest bore-hole is only 550 metres deep, whilst the wells are often only 20 to 100 metres deep. Very large areas of the Roumanian oilfields are the property of the State, and have hitherto been unworked, but a law has recently been passed providing for the leasing of these lands to private companies, and containing important provisos for preventing monopolies. Given cheap transport, Roumania could supply central Europe with oil at lower prices than any of its competitors. The bulk of the petroleum is refined, and the residue employed in Roumania for heating purposes. 378 out of 512 locomotives belonging to the State railways have been adapted for using petroleum residue as fuel. A large percentage of the production is sent to other countries, mostly to Great Britain, France, Germany and Austria-Hungary. In 1904 the total quantities of petroleum exported were—crude, 48,498 tons, valued £58,171, and refined, 78,553 tons, valued at £188,522.\* The value of the petroleum exported in 1905 was £353,505.

*Salt.*—The country is blessed with rich deposits of salt, which extend for a distance of about 100 miles along the Carpathians. One bed of pure rock salt is from 800 to 1,000 feet thick.† The industry is a Government monopoly, and much of the work in the rock salt mines is carried on by convict labour. The production in 1904 was 109,000 tons, of which 73,000 were consumed in the country, and the remainder exported, chiefly to Bulgaria and Servia.\*

*Stone.*—Roumania has hitherto been largely dependent upon the foreigner for stone and building materials generally, though ample supplies exist in the country itself, especially in the Dobrudja. However, the paving stones from Belgium and France have now been to some extent ousted by native products, in spite of the difficulties which beset the Roumanian quarry-owner in the shape of expensive transport and want of trained workmen. As these obstacles disappear, quarrying may be expected to become an important industry in the country.

There are important granite quarries in the Dobrudja, and the total number of quarries in the country is shown by the latest published official statistics‡ to be very considerable. There are a few marble quarries.

For centuries the alluvia of many of the rivers have been known to carry gold, and a little of the precious metal is occasionally washed from the sands by the peasantry ; but the gold resources of Roumania are as yet unknown. The same may be said of the ores of cobalt, copper, lead, manganese, mercury, iron, and silver, and of the beds of anthracite and coal, which have been found cropping out in various parts of the country.

TABLE 498.  
OUTPUT of MINERALS during the Years 1903 and 1904.\*

Mineral.	1904.	1905.‡
	Metric Tons.	Metric Tons.
Lignite ... ..	110,000¶	101,058**
Petroleum (crude) ... ..	497,000	611,356
Salt .. ...	109,000	—
Stone ... ..	980,000¶	—

\* Consul-General Trotter, "Trade of Roumania for the year 1905," *Dipl. and Cons. Reports* No. 3618, Ann. Ser., 1906 [Cd. 2682-143], and Consul Wardrop, "Trade of Roumania for the year 1905 (supplementary)," *Dipl. and Cons. Reports*, No. 3749, Ann. Ser., 1907 [Cd. 3283-10].  
† Cr  mer, *Exposition Universelle de 1900, Paris. Notice sur l'Exploitation du Gisement de sel gemme de la Roumanie pr  sent  e au Jury de la Classe 63.*  
‡ *Statistica Carierelor din t  ra*, 1897 ; Bucharest, 1898.  
§ Complete figures for 1905 not received.  
¶ Figures for the year 1903.  
¶ " " " " 1901.  
\*\* Amount consumed by the Roumanian State railways.



## Russia.\*

The mineral workings in Russia for coal, gold, iron ore, manganese ore, petroleum, platinum, and salt, are important as will be seen by the tables of the number of persons employed, and the value of the products obtained.

*Asbestos.*†—Important deposits of asbestos exist in Finland. The output for the year 1903 was 5,264 metric tons, of which 2,028 metric tons, valued at £39,512, were exported from Reval, the greater portion being destined for Great Britain.

*Coal.*—The quantity of coal raised in Russia has risen from 3½ million tons in 1882 to over 19½ million tons in 1905. The most productive coal region of Russia is the Donetz Basin,‡ in the province of Ekaterinoslav, which covers an area of 16,000 square miles and the seams varying in thickness from 1 to 7 feet.¶ The output of this basin in 1905 was 1,531,935 tons of anthracite and 11,331,451 tons of bituminous coal. Next in importance comes Poland, with an output of 4,705,567 tons of true coal and brown coal in 1904, and, owing to strikes, about 25 per cent. less in 1905§. The Dombrowa Basin, in Poland, is a continuation of the great Silesian Coal Basin. These two basins together produced in 1905 about 90 per cent. of the coal of Russia. Other coal regions worth mentioning are the Urals, the Eskibastus district south of Omsk, the Kusnetski Basin, in the Government of Tomsk, and the Tkhibulski district, in the Caucasus. The Eskibastus coalfield alone, in the neighbourhood of Pavlodar, on the Irtysh, is estimated to have reserves of more than 3,000 millions of tons.

New coalfields are reported to have been discovered in 1905 in the Karatav Mountains on the River Bugun in the Syr Daria territory, and at Izykh near Minusinsk, also in the Sulyuktin Pass. The latter is estimated to contain nearly 100 million tons of good coal.||

Coal is abundant in Siberia, both east and west, and even along the line of the Trans-Siberian Railway; but the quality is poor.

In the island of Saghalien coal is worked by Russian convicts; the present output is small, and is used for steamships.

*Copper.*—More than 93 per cent. of the copper obtained in Russia in 1903 came from the Urals and the Caucasus.

*Gold.*—In 1903 the output of gold of Russia was 2,120 poods, or 1,116,468 ozs., and according to Mr. Consul Wardrop,¶ the quantity refined at the Government laboratories in 1904 was 1,382,481 ozs. in 1904. The gold is derived mainly from alluvial deposits in the Urals, and in Eastern and Western Siberia. Gold dredging is carried on in the Urals. The production of gold from the Urals in 1903 was 264,898 ozs., and from Siberia 850,517 ozs.

*Iron.*—The deposits of iron ore in various parts of the Empire are enormous. About 55 per cent. of the pig-iron is produced in the South of Russia, a large quantity of the ore being obtained from the rich deposits in the Krivoy Rog district. In 1903 the total number of blast furnaces at work was 234, and the amount of pig-iron produced was 2,487,781 metric tons.

*Manganese ore.*\*\*—There are two great manganese districts of Russia, one in the province of Kutais and county of Sharapan, which extends over the whole central part of the basin of the River Kvirila, and the other in the province of Ekaterinoslav. The beds of manganese ore are interstratified with sand and clay of Eocene age. The richest deposits cover an area of more than 50 square miles, and the mining district is estimated to contain at least a hundred million tons of workable ore. The ore, as exported, contains about 50 per cent. of metallic manganese, 6 to 9 per cent. of silica, and 0.12 to 0.17 per cent. of phosphorus. The former district produced 91 per cent. of the Manganese ore obtained in 1903. 477,564 tons of ore, valued at £660,638,

\* Collection of Statistical Information respecting the Mining and Metallurgical Industries of Russia for the year 1903. St. Petersburg, 1906.

† Consul Cooke, "Trade of Finland for the year 1903." *Dipl. and Cons. Reports*, No. 3278, Ann. Ser., 1904 [Cd. 2236-22], p. 13, and Vice-Consul Soucanton, "Trade of Reval for the year 1903." *Dipl. and Cons. Reports*, No. 3,304, Ann. Ser., 1904 [Cd. 2236-48], p. 14.

‡ Consul Medhurst, "Trade of Consular District of Rostov-on-Don for the year 1905." *Dipl. and Cons. Reports*, No. 3,610, Ann. Ser., 1906 [Cd. 2682-135], p. 15.

§ Consul-General Murray, "Trade and Agriculture of Poland Lithuania for the year 1905." *Dipl. and Cons. Reports*, No. 3538, Ann. Ser., 1906 [Cd. 2682-63], p. 38.

¶ "Foreign Commerce of Russia and Trade of the Consular District of St. Petersburg for the year 1905." *Dipl. and Cons. Reports*, No. 3584, Ann. Ser., 1905 [Cd. 2682-109].

¶ "Trade of the Consular District of St. Petersburg for the year 1905." *Dipl. and Cons. Reports*, No. 3584, Ann. Ser., 1906 [Cd. 2682-109].

\*\* *Caucasian Manganese*. Kutais, 1900. London, 1901.



## RUSSIA—continued.

and 352,145 tons, valued at £467,263, were exported from European Russia in the years 1903 and 1904 respectively.\*

*Peat.*—Though peat may appear an unimportant fuel compared with coal, it nevertheless is so abundant and is so easily obtained in certain localities far removed from railways that it deserves special attention. In Russia there is an office under the Ministry of Agriculture and Domains (*Bureau de l'Industrie des Tourbes*) which supervises the peat industry. Many of the turbaries have been carefully tested by borings, and an official map exhibited at the Paris Exhibition gave information about 113 turbaries, occupying an area of 398 sq. miles (103,000 hectares); several are from 19 to 38 sq. miles (5,000 to 10,000 hectares) in area and over.

The Rojsjo Peat Works manufacture compressed peat in Finland.†

*Petroleum.*\*—The production of the oil wells near Baku in 1905, owing to labour troubles, shows a considerable decrease compared with the previous year, the total output being about 400,000,000 poods (6,552,000 metric tons) of crude oil in 1905 against 613,899,000 poods (10,055,669 metric tons) in 1904. The Sabounchi field was, in 1904, the most productive of the five oil-fields near Baku. In the five districts there were on an average 1,555 producing wells at work in 1904 and 1,420 in 1903. The average depth of the producing wells in 1903 was 693 feet on the Balakhany field, 994 on the Sabounchi, 1,456 on the Romany, 1,589 on the Bibi-Eibat, and 490 on the Binagadi. Of the total 596½ million poods obtained in the Baku fields in 1903, only 53½ million were derived from wells in which the oil rose to the surface; the remainder had to be drawn up mechanically.

Russia's wealth in petroleum is not confined to the Baku district; wells at Grozny are yielding large quantities of oil. Great hopes are based upon the new oil-field near the river Uchta on the boundary of the provinces of Archangel and Wologda, where the oil is stated to be more abundant than that of the Caucasus, but the region is difficult of access and the field cannot be worked unless the Kotlas Railway is extended to the works. Oil is reported to have been discovered at Gulkhan in the Kokand district.

*Platinum.*—All the platinum is obtained from alluvial deposits in the Urals, and large finds of the mineral were reported in 1905 at Ugora and Kochkomory; the total output in that year was 5,241 kilograms (14,042 ozs.). Russia produces the bulk of the world's supply of this metal. At the end of 1904, 12 dredges were at work in the Ural district.\*

*Quicksilver.*—All the quicksilver is obtained at Nikitovsky in the district of Ekaterinoslav, in South Russia; the deposits were first worked in 1885.

*Salt.*—In 1903 more than 40 per cent. of the salt produced in Russia was from lakes, especially in the Crimea and the adjacent provinces, and in Astrakhan. Salt is likewise obtained by evaporating brine pumped up from boreholes, and by mining beds of rock-salt. The quantity of rock and boiled salt produced from the mines near Slaviansk and Bachmut in the Ekaterinoslav district was 513,340 tons in 1903, and 481,550 tons in 1904.‡

In Western Siberia salt is obtained from a number of lakes which partially dry up in summer and in hot years deposit crusts of salt from two to four inches thick.

In Eastern Siberia the salt is obtained from springs, and from deposits of rock-salt.

*Sulphate of sodium.*—Nearly 64 per cent. of the output in 1903 came from the Yeniseisk district in the Government of Tomsk; the great Marmischanski Lake is estimated to contain more than a million tons of sulphate of sodium.

*Sulphur.*§—Native sulphur occurs in various parts of the Empire; it is worked in Daghestan and at Czarkowsky, in the Government of Kielce, near the Austrian frontier.

*Zinc ore.*§—The zinc ore is obtained from deposits of calamine in Poland. New and extensive deposits have recently been discovered in the Government of Kielce. The smelting works suffered from the strikes and only 7,515 tons of metal were obtained in 1905 as against 10,443 tons in the preceding year.

\* Consul Wardrop, "Trade of the Consular District of St. Petersburg for the year 1904." *Dipl. and Cons. Reports*, No. 3424, Ann. Ser., 1906 [Cd. 2236-168], and for 1905, No. 3584 [Cd. 2682-109].

† Consul Cooke. *Op. cit.* No. 3278, p. 12.

‡ Vice-Consul Martin, "Trade of Consular District of Rostov-on-Don for the year 1904." *Dipl. and Cons. Reports*, No. 3447, Ann. Ser., 1905 [Cd. 2236-191], p. 12.

§ Consul-General Murray, "Trade of Warsaw and District for the year 1897." *Dipl. and Cons. Reports*, No. 2135, Ann. Ser., 1898 [C. 8648-157], and "Trade and Agriculture of Poland and Lithuania for the year 1904." *Dipl. and Cons. Reports*, No. 3351, Ann. Ser., 1905 [Cd. 2236-95], and Consul Wardrop. *Op. cit.* No. 3584.



RUSSIA—continued.

TABLE 499.

PERSONS EMPLOYED at MINES and other MINERAL WORKINGS during the Years 1902 and 1903.\*

Kind of Mineral working.	Persons Employed during the Year.	
	1902.	1903.
Asbestos ... ..	1,380	1,984
Asphalt ... ..	424	383
China clay ... ..	449	589
Coal ... ..	105,688	105,774
Cobalt, chrome, iron, &c. ... ..	1,317	1,293
Copper ore ... ..	6,729	5,840
Fire clay ... ..	8,380	7,754
Gold ... ..	86,770	86,797
Iron ore ... ..	38,603	27,243
Manganese ... ..	3,123	3,851
Naphtha ... ..	24,560	26,238
Phosphorite ... ..	304	489
Platinum ... ..	1,803	2,699
Quicksilver ... ..	899	1,101
Salt ... ..	21,957	15,694
Sulphur ... ..	166	50
Silver-lead ore ... ..	1,525	1,202
Stone Quarries ... ..	38,944	43,563
Zinc ore ... ..	1,224	1,459
Total ... ..	344,245	334,003

TABLE 500.

PERSONS EMPLOYED at GOLD MINES during the Years 1902 and 1903.\*

Year.	Number of Persons Employed.				
	Urals.	West Siberia.	East Siberia.	Finland.	Total.
1902 ... ..	39,086	10,429	37,200	55	86,770
1903 ... ..	37,300	11,546	37,886	65	86,797

TABLE 501.

QUANTITY and VALUE of MINERALS produced during the Years 1902 and 1903.\*

Mineral.	District whence Obtained.	1902.		1903.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	£	Metric Tons.	£
Asbestos .. ..	Ural .. ..	4,507	43,068	5,284	50,292
Asphalt and mineral pitch. .. ..	Syzran, Caucasus .. ..	12,360	24,038	25,577	42,487
China clay .. ..	Ekaterinoslav, Volyn, Chernigov, Kieff, Cherson .. ..	20,231	24,345	20,349	24,483
Chrome ore .. ..	Perm, Orenburg .. ..	19,855	12,665	16,421	10,597
Coal { Anthracite .. .. Coal .. .. Lignite .. .. }	Donetz, Poland, Moscow, Ural, Kieff, Turkestan, Tomak, Caucasus, Kirgiz Steppe, Saghalien, Eastern Siberia. }	16,465,836	5,837,652	17,888,497	5,972,533

\* Collection of Statistical Information respecting the Mining and Metallurgical Industries of Russia for the year 1903, St. Petersburg, 1906. Later figures, except those relating to output of coal, copper, gold, iron, manganese, petroleum, platinum, silver and zinc (see Table 502) are not available.

RUSSIA—continued.

TABLE 501—continued.

QUANTITY and VALUE of MINERALS produced during the Year 1902 and 1903—  
continued

Mineral.	District whence Obtained.	1902.		1903.	
		Quantity.	Value.	Quantity.	Value.
		Metric Tons.	\$	Metric Tons.	\$
Cobalt ore and regulus	Caucasus .. .. .	Not stated.	—	Not stated.	—
Copper .. .. .	Ural, Kirghis Steppe, Olonets, Western Siberia, Turkistan, Caucasus, Finland.	8,517	754,908	9,352	781,712
Gold .. .. .	Ural, Eastern and Western Siberia, Finland .. .. .	KU. 34,537	4,168,378	KU. 34,736	4,145,867
Iron (pig).. .. .	Ural, Central Russia, Poland, Southern Russia, Northern Russia, Siberia, Finland.	2,598,195	9,046,195	2,487,781	7,996,490
Iron pyrites .. .. .	Ural, Toula, Novgorod .. .. .	26,405	19,880	22,779	16,908
Lead .. .. .	Tomsk, Transbaikai, Kirghis Steppe, Caucasus, Turkistan	235	2,458	196	1,185
Manganese ore .. .. .	Kutais, Ural, Ekaterinoslav .. .. .	596,518	155,908	414,333	1,303,171
Ozokerite .. .. .	.. .. .	188	7,396	86	2,141
Petroleum .. .. .	Caucasus, Transcaspien, Turkistan .. .. .	11,110,518	4,056,257	10,414,785	5,571,368
Phosphorite .. .. .	Bessarabia, Kostroma, Podolia, Smolensk .. .. .	12,708	10,039	14,685	9,770
Platinum .. .. .	Ural .. .. .	KU. 6,128	503,764	KU. 6,011	542,961
Quicksilver .. .. .	Ekaterinoslav .. .. .	416	59,128	362	46,744
Salt { Rock salt Lake salt Salt from brine }	Astrakhan, Perm, Ekaterinoslav, Orimea, Kharkov, Orenburg, Tomsk, Caucasus, &c.	1,847,019	801,908	1,958,937	750,539
Silver .. .. .	Tomsk, Transbaikai, Kirghis Steppe, Caucasus, Finland ..	KU. 1,196	4,949	KU. 1,147	4,180
Sulphate of sodium ..	Tiflis, Kuban, Tomsk, Vologda .. .. .	4,420	3,118	3,770	2,647
Sulphur .. .. .	Daghestan, Poland, Turkistan .. .. .	1,800	11,020	281	1,749
Tin .. .. .	Finland .. .. .	8	1,095	3	412
Zinc .. .. .	Poland .. .. .	3,264	265,058	9,894	265,391
	Total Value .. .. .	—	26,606,474	—	27,105,025

The value of the output from quarries in the years 1902 and 1903 is given in the Russian Statistical Volume as 5,041,906 roubles (£532,971) and 5,953,958 roubles (£626,406) respectively, but these figures are really too low, as they do not include the produce of quarries in the St. Petersburg Olonetz district and in South-Eastern Russia.

TABLE 502.

QUANTITIES of certain MINERALS obtained during the years 1904 and 1905.\*

Mineral.	1904.	1905.
	Metric Tons.	Metric Tons.
Coal ... ..	19,318,370	19,628,008
Copper† ... ..	10,700	8,840
Gold (Fine) ... ..	Kilos. 43,000‡	Not stated.
Iron (pig) ... ..	2,978,325	3,025,790
Manganese ore (exported) ... ..	485,228	357,796
Petroleum ... ..	10,055,669	6,552,000
Platinum ... ..	Kilos. 4,775§	Kilos. 5,241
Silver ... ..	Kilos. 5,378	Not stated.
Zinc ... ..	10,611	7,636

\* Information obtained from Consular and other Reports. The figures are provisional only.  
† Return compiled by H. B. Merton & Co.  
‡ Estimated.  
§ Output for 10 months only.



RUSSIA—continued.

TABLE 503.

DEATHS from ACCIDENTS at the MINES and other WORKINGS for MINERALS during the Years 1902 and 1903.\*

Kind of Mines and Workings.	Number of Persons Killed.		Death-rate per 1,000 Persons Employed.	
	1902.	1903.	1902.	1903.
Coal Mines...	267	211	2.53	1.99
Gold and Platinum	55	53	.62	.59
Other Mines and Workings	71	83	.64	.87
Quarries	36	50	.92	1.15
Total	429	397	1.25	1.19

Saba. (See DUTCH WEST INDIES.)

Sahara. (See FRENCH WEST AFRICA.)

Sandwich Islands.†

The mineral industries of the Sandwich Islands are of slight importance. There are large deposits of gypsum, and red and yellow ochre ; sulphur is found around the volcanoes.

The extraction of salt from sea water is carried on to supply local wants.

Santo Domingo.‡

The Island contains very rich mineral deposits, but, owing to a lack of means of communication between the interior and the ports, they have not been thoroughly worked. In addition to coal, asbestos and phosphate, the ores of copper, gold and iron have recently been discovered.

Saxony. (See GERMAN EMPIRE.)

St. Martin. (See DUTCH WEST INDIES.)

\* Collection of Statistical Information respecting the Mining and Metallurgical Industries of Russia for the year 1903. Petersburg, 1906. Later figures are not available.  
† Day, "Mineral Resources of the Antilles, Hawaii, and the Philippines. Eng. Mag., Vol. XVII., 1899, p. 212.  
‡ Consul-General Vansittart, "Trade of Hayti and Santo Domingo for the year 1904." Dipl. and Cons. Reports, No. 3385, Ser., 1905 [Cd. 2236-129], p. 11.

Senegal. (See FRENCH WEST AFRICA.)

Servia.\*

According to an official map Servia is richly endowed with mineral wealth; but until railways have been constructed and the existing cart roads improved it is idle to expect that it will become a great mining country. It possesses deposits of the ores of antimony, arsenic, chromium, copper, gold, iron, lead and mercury, besides coal, graphite, gypsum, magnesite, sulphur, marble and other stones for ornamental and building purposes.

*Coal.*—Most of the coal region lies near the Danube, which enables the mineral to be shipped down the river to districts requiring fuel and to the Black Sea. The most important workings are at Dobra, on the Danube. The coal is of Liassic Age.

True coal, said to be almost as good as English coal, occurs and is worked in the Timok Valley, near Tschuka. In the Boljevac district a coal basin extending over a large area has recently been discovered.

Vice-Consul Thesiger states† that Servia is rich in mines of brown coal which might be worked to a much larger extent than at present. Thick beds of Tertiary lignite occur at Senje, Sisevac, Jelasnica, Kraljevac, and in many other parts of the country.

*Copper and Iron.*—The ores of these two metals have been worked in the neighbourhood of Maidanpek. At Bor, Metovnica, Zlot, Markov, Kamen, and Lasovo, to the south of Maidanpek copper ore has been discovered in several quartz veins in a mass of andesite.‡

*Gold.*—This was worked in Servia by the Romans, and then many centuries later by the Austrians. Turkish invasions put a stop to mining, but now there are signs of a revival and extension of the industry. The gold is found in alluvial gravel and in quartz veins, especially in the district west of the River Timok, which forms the frontier of Bulgaria. Near Glogovica there are many veins of gold-bearing pyrites.

Gold-dredging operations on the River Pek have been started.

TABLE 504.

PERSONS EMPLOYED at MINES during the Years 1904 and 1905.

	Year.						Under and Above-ground.
	1904	...	...	...	...	...	2,019
	1905	...	...	...	...	...	3,617

In addition to the above, there were about 120 persons employed at quarries.

\* Official return furnished by the Mining Department of the Ministry of Agriculture, Commerce and Industry, Belgrade; Consul Macdonald, "Trade of Servia for the years 1897-98." *Dipl. and Cons. Reports*, No. 2207, Ann. Ser., 1899 [C. 9044-33]; Antula, *Revue générale des gisements métallifères en Serbie*. Paris, 1900; and Jastrow, "The Mining Industries of Servia." *Eng. Min Jour.*, Vol. LXX., 1900, p. 523.  
† "Trade of Servia for the year 1902 and first nine months of 1903." *Dipl. and Cons. Reports*, No. 3139 Ann. Ser., 1904 [Cd. 1766-73], p. 14.  
‡ Antula, *Les gisements de cuivre dans les environs de Bor et de Kricelj*, Belgrade, 1904.



## SERVIA—continued.

TABLE 505.

QUANTITY and VALUE of MINERALS produced during the Years 1904 and 1905.

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Antimony (regulus) ... ..	400	194,920	60	79,329
„ (oxide) ... ..	72	28,847	21	
Brown coal ... ..	108,585	820,741	105,647	791,128
Cement ... ..	5,250	160,000	6,000	187,684
Coal ... ..	43,529	663,876	47,848	758,789
Copper (metal) ... ..	164	272,339	35	74,104
„ ore ... ..	50	2,000	—	—
Gold (fine) ... ..	Kilos. 85	258,236	Kilos. 87	251,494
Lead ... ..	25	9,817	42	16,395
Lignite ... ..	31,090	147,492	30,906	158,072
Millstones ... ..	450	32,000	118	7,198
Silver (metal) ... ..	Kilos. 48	5,018	Kilos. 10	1,065
Total value in francs ... ..	—	2,595,286	—	2,325,258
„ „ £ sterling ... ..	—	£103,811	—	£93,010

TABLE 506.

DEATHS from ACCIDENTS at MINES during the Years 1904 and 1905.

Year.	Number of Deaths.	Death-rate per 1,000 Persons Employed.
1904 ... ..	6	2·97
1905 ... ..	8	2·21

## Siam.\*

Mining in Siam is, at the present time, practically confined to tin, gems (sapphires and rubies) and gold, although several other minerals exist and have been worked in the country.

*Coal.*—No true coal is known to occur in Siam. Lignite or brown coal is found at Bandon, Gerbi, Plien, Trang, in the Malay Peninsula.

*Copper.*—The chief deposits are situated at Chan Tuk and in the Chiengmai district, but none are being worked at the present time.

*Gold.*—The precious metal is very widely distributed. Alluvial gold is worked principally in Pu Kiri, Bangtaphan, Kow Suplu, Watana and Tomoh districts. Reef mining is carried on by Chinese in the latter district, and a European company is developing a property containing several veins in the Sisaphon district.

*Gems.*—The chief ruby workings are in Chantaboon and Kratt, but the sapphires are nearly all obtained from the Phalin district in Battambang. Most of the work, which consists of digging small pits in the neighbourhood of streams and washing the

\* Information furnished by the Royal Department of Mines and Geology, Bangkok.

gem-bearing earth by hand, is carried on by Burmese and Shans, who, however, employ a considerable number of Laos as labourers. The value of the output of gems is estimated to be about £300,000 annually. In 1905 the value of the rubies and sapphires exported from Bangkok was £5,355.\*

*Iron.*—In ancient times there was a considerable amount of iron mining, but now there are only a few places where it is carried on, and the industry is on quite a small scale.

*Lead.*—So far as it is known veins of argentiferous galena have been worked only in the Malay State of Jalar. The value of the lead exported from Bangkok in 1905 was £310.\*

*Petroleum.*—A small quantity of petroleum is found in Muang Fang ; the oil is obtained by skimming the water which collects in shallow pits dug for the purpose.

*Salt.*—5,990 tons of salt valued at £6,100 were exported from Bangkok in 1905.\*

*Tin.*—This is the only metal of any importance in Siam. The mines of the State are chiefly situated in the Siamese Malay Provinces, along the edge of the granites of the main ridge which forms the watershed of the peninsula. Tin is also found in small quantities in the valley of the Nam Sak river and in Northern Siam. Puket Island, on the West Coast, is the principal tin-mining centre at present. The value of the tin exported from Bangkok in 1905 was £7,118.\*

TABLE 507.

APPROXIMATE NUMBER of PERSONS employed at MINES and MINERAL WORKINGS during the Year 1904.†

Kind of Workings.	Underground.	Above Ground.	Total.
Gold Mines .. ...	300	800	1,100
Iron ore workings ... ..	—	50	50
Other workings ... ..	—	25,100	25,100
Total ... ..	300	25,950	26,250

TABLE 508.

APPROXIMATE QUANTITY and VALUE of MINERAL obtained during the Year 1904.†

Mineral.	Quantity.	Value.
Gold (Fine) .. ...	78 Kilos.	£ 10,000
Tin ore ... ..	8,000 Metric Tons.	450,000

No statistics of accidents at mines and mineral workings are obtainable.

Singkep. (See DUTCH EAST INDIES.)

Soudan. (See EGYPT, AND SAHARA.)

\* Acting-Consul Lyle "Trade of Bangkok for the year 1905." *Dipl. and Cons. Reports*, No. 3717 Ann. Ser. 1906 [Cd. 2682-242].

† Later figures not received.



## Spain.\*

Spain is justly celebrated for its mineral wealth. It produces more cupreous pyrites than any other country in the world, and very large amounts of lead ore and quicksilver; its iron ores are abundant and of excellent quality, and it has of recent years become an important supplier of manganese ores.

The total number of persons employed in and about mines in Spain during the year 1905 was 105,428, or an increase of 12,053 on those of the previous year.

*Coal.*—Seven provinces produced coal in 1905. The total output now exceeds three million tons, nearly two-thirds coming from the province of Oviedo. Anthracite is worked on a small scale in the provinces of Cordova and Palencia and lignite in nine provinces; but the total output is insignificant.

*Copper.*—The working of the Rio Tinto mines and its neighbours continue to give very satisfactory results; the output of the province of Huelva was 2,577,475 tons. The only other copper-bearing province of any importance is Seville. Ancient workings for copper are being successfully opened up in the province of Cordova.†

*Gold.*—Mines exist in the province of Corunna, but no gold was obtained in 1905.

*Iron Ore.*—The province of Biscay, which includes the Bilbao district, is the great stronghold of the iron industry in Spain; most of the workings are open quarries, and the ores worked are red and brown haematite and siderite. The total output of the province in 1905 was 4,988,510 tons, or an increase of 433,559 tons compared with the previous year. More than half of this quantity was exported to the United Kingdom. Mr. Consul-General Wood states in his report‡ that the best quality ores upon which the Bilbao district founded its importance, are gradually diminishing.

Next in importance after Biscay comes the province of Santander with an output of 1,283,432 tons.

*Lead.*—Most of the lead comes from the provinces of Almeria, Badajoz, Ciudad Real, Cordova, Jaen, and Murcia; much of the ore, and especially that of Murcia, contains a notable amount of silver. Old mines known to be rich in lead and other ores which have been unexploited for years are being drained for re-working in the Carthagena district.§

*Manganese Ore.*—Mining for manganese is almost entirely confined to the province of Huelva. The output of the province in 1905 was 26,020 or 7,290 tons more than the preceding year. The Spanish mines considerably benefited in 1905 by the disturbances in the Caucasus, and nearly 47,000 tons of manganese ore were exported from the Port of Huelva during the year.†

*Marble.*—The province of Malaga produces some very fine marble, but greater facilities for transport are needed for working the deposits.

*Quicksilver.*—From time immemorial the Almaden mine, in the province of Ciudad Real, has been renowned as a producer of cinnabar. The other quicksilver mines are of comparatively little importance; several are worked in the province of Oviedo.

*Salt.*—Much of the salt is obtained from sea water, especially in the provinces of Cadiz and Alicante. Fishery salt produced at Cabo de Gata is shipped to the east coast of Scotland.§

*Sulphur.*—In addition to the sulphur contained in cupreous iron pyrites, Spain has mines of native sulphur in the provinces of Albacete, Almeria, and Murcia.

*Tin Ore and Wolfram.*—These two minerals occur together in the provinces of Caceres, Corunna, Pontevedra and Salamanca. The ore produced from the Wolfram mine at Montoro in the province of Cordova is exported to Germany.

*Zinc.*—Murcia still retains its position as the principal zinc-producing province, Santander taking the second place. The two provinces between them produce nearly over 83 per cent. of the total output of the country.

\* *Estadística Minera de España correspondiente al año de 1905*, Madrid, 1906.

† Consul Keyser "Trade of the Consular District of Cadiz for the year 1905," *Dipl. and Cons. Reports*, No. 3607, Ann. Ser. 1906. [Cd. 2682-132].

‡ "Trade of the Consular District of Bilbao for the year 1905," *Dipl. and Cons. Reports*, No. 3590, Ann. Ser. 1906, [Cd. 2682-115].

§ Consul Haggard "Trade of the Consular District of Malaga for the year 1905," *Dipl. and Cons. Reports*, No. 3,644, Ann. Ser. 1906. [Cd. 2682-169].

SPAIN—continued.

TABLE 509.

PERSONS EMPLOYED at MINES during the Years 1904\* and 1905.†

Year.				Men.	Women.	Boys.	Total.
1904	...	...	...	86,862	2,770	3,743	93,375
1905	...	...	...	97,890	2,768	4,770	105,428

TABLE 510.

PERSONS EMPLOYED in the PRINCIPAL MINING INDUSTRIES during the Years 1904\* and 1905.†

Kind of Mines.	1904.				1905.			
	Men.	Women.	Boys.	Total.	Men.	Women.	Boys.	Total.
Brown coal ... ..	1,005	31	15	1,051	1,389	31	7	1,427
Coal and anthracite ...	19,695	1,238	449	21,382	20,447	1,233	563	22,243
Copper ore and cupreous pyrites.	11,729	272	319	12,320	11,982	187	1,009	13,178
Iron ore ... ..	27,987	113	1,278	29,378	32,875	89	1,440	34,404
Lead ore ... ..	18,336	508	1,263	20,107	21,458	650	1,232	23,340
Quicksilver ore ... ..	1,581	—	54	1,635	1,787	—	60	1,847
Zinc ore ... ..	2,623	317	101	3,041	3,068	320	163	3,551
Other mines ... ..	3,906	291	264	4,461	4,884	258	296	5,438
Total ... ..	86,862	2,770	3,743	93,375	97,890	2,768	4,770	105,428

TABLE 511.

QUANTITY and VALUE of MINERALS produced during the Years 1904\* and 1905.†

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Pesetas.	Metric Tons.	Pesetas.
Aluminous earths ... ..	925	24,274	221	6,666
Amblygonite ... ..	90	1,800	120	2,400
Anthracite ... ..	119,096	1,451,138	135,099	1,881,090
Antimony ore ... ..	245	14,550	77	5,760
Arsenical pyrites ... ..	3,510	47,921	4,790	83,580
Asphalt (rock) ... ..	3,761	37,610	5,725	57,250
Barium sulphate ... ..	453	9,846	290	4,658
Bismuth... ..	Kilos. 4,600	2,300	Kilos 14,000	17,400
Bituminous shale ... ..	100	1,250	750	18,750
Brown coal ... ..	100,673	629,388	168,994	1,257,271
China clay ... ..	1,700	10,000	720	7,550
Clay ... ..	2,369	3,930	2,142	4,025
Coal ... ..	2,903,771	28,099,625	3,067,826	30,339,803
Cobalt ore ... ..	25	1,250	25	1,250
Copper ore ... ..	21,614	1,121,750	44,372	1,556,061
Cupreous iron pyrites... ..	2,624,512	41,467,289	2,576,682	41,227,228
Garnet ... ..	100	2,000	—	—
Graphite ... ..	30	270	15	135
Iron ore ... ..	7,964,748	42,116,866	9,077,245	47,133,522
Iron pyrites ... ..	161,841	676,469	179,079	729,680

\* Estadística Minera de España Correspondiente al año de 1904, Madrid, pp. 26 and 27.  
† " " " " " 1905, " pp. 26 and 27.





Spanish Possessions. (See CANARY ISLANDS.)

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Spitzbergen.\*

Coal has been discovered in several places in Spitzbergen. Bear Island is said to possess workable seams of excellent coal.

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Sumatra. (See DUTCH EAST INDIES.)

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Surinam. (See DUTCH GUIANA.)

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Sweden.†

*Coal.*—All the Swedish collieries are in Scania, the most southerly province of the kingdom. The seams, which are of Rhætic Age, are interstratified with beds of fire-clay, and the two minerals are worked together.‡ The thickness of the coal seams, including the partings of shale, varies from three to five feet.

*Copper.*—The well-known Falu mine furnishes much of the copper of Sweden.

*Iron ore.*—Sweden has long been famous as an iron-producing country, and its reputation is due partly to the excellence of its ores and partly to the fact that charcoal is employed almost exclusively as the fuel for the blast-furnaces. Sweden likewise exports much iron ore, but new blast-furnaces have been erected which will enable Gellivare ores of low percentage of metal to be treated within the country by a process known as the "Gröndahl method." Of the total output of 4,365,967 tons in 1905, the big workings at Gellivare and Kirunavara in Lapland furnished nearly 57 per cent. The Kirunavara workings shipped 1,472,053 tons from Narvik on the Ofoten Fjord in Norway; 420,000 tons of this quantity were destined for the Netherlands, 409,000 tons for Germany, 54,900 tons for Belgium, and 187,850 tons for the United Kingdom.§ The province of Kopparberg with its numerous mines, which furnished over a million tons of ore in 1905, comes next in importance to Lapland.

The quantity of iron ore in the principal Norbotten and Central Swedish mines is estimated by Professor Törnebohm to be about 1,200 million tons.§

*Peat.*—The table of production takes no account of either the peat-diggings or of the stone-quarries. Peat is largely dug for use as household fuel, and for making peat-litter and peat-mould; it was also used extensively on the State locomotives during 1904.||

*Stone.*—Granite, using the word in its commercial sense, is quarried on the West Coast of Sweden, and also on the Baltic, and forms an important article of export. Porphyry and marble are also products of Sweden. The value of the exports of stone in 1905 amounted to £713,030.§

*Zinc.*—The Ämmeberg mines supply most of the zinc ore, which is exclusively blende. A large quantity of the ore is calcined by the Vieille Montagne Co. and exported to Belgium.

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\* *B. u. k. Zeitung.* Vol. LIX., 1900, p. 476.

† *Bidrag till Sveriges Officiella Statistik för år 1905*, Stockholm, 1906.

‡ Nordenström, *L'industrie minière de la Suède*, Stockholm, 1897.

§ Consul MacGregor, "Trade of Stockholm and Eastern Coast of Sweden" for the year 1904. *Dipl. and Cons. Reports* No. 3412. Ann. Ser., 1905 [Cd. 2236-156], pp. 6 and 18, and for 1905, No. 3560 [Cd. 2682-85].

|| Consul Duff, "Trade of Consular District of Gothenburg for the year 1904." *Dipl. and Cons. Reports*, No. 3450, Ann. Ser., 1905 [Cd. 2236-194], p. 9.



SWEDEN—continued.

TABLE 514.

PERSONS EMPLOYED at various MINES and FELDSPAR QUARRIES during the Years 1904 and 1905.

Year.	Kind of Workings.	Under-ground.			Above-ground.			Totals.
		Men.	Young Persons under 18.	Total.	Men.	Women and Young Persons under 18.	Total.	
1904	Coal mines ... ..	1,478	146	1,624	450	48	498	2,122
"	Iron " ... ..	4,081	105	4,186	4,884	990	5,874	10,060
"	Other " ... ..	817	—	817	689	259	948	1,765
"	Feldspar quarries ... ..	72	—	72	134	72	206	278
	Total for 1904 ... ..	6,448	251	6,699	6,157	1,369	7,526	14,225
1905	Coal mines ... ..	1,413	134	1,547	459	47	506	2,053
"	Iron " ... ..	4,000	109	4,109	5,158	1,008	6,166	10,275
"	Other " ... ..	871	1	872	808	275	1,083	1,955
"	Feldspar quarries ... ..	60	—	60	155	76	231	291
	Total for 1905 ... ..	6,344	244	6,588	6,580	1,406	7,986	14,574

TABLE 515.

(QUANTITY of MINERALS obtained from MINES and FELDSPAR QUARRIES during the Years 1904 and 1905.

Mineral.	Year.			
	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Crowns.	Metric Tons.	Crowns.
Alum ... ..	125	11,476	139	13,163
Apatite ... ..	2,929	23,429	—	—
Coal ... ..	320,984	2,426,697	322,384	2,364,343
Cobalt ore ... ..	—	—	4	1,991
Copper ore ... ..	36,834	368,200	39,255	431,154
Copper, sulphate ... ..	1,248	405,700	1,029	349,890
Feldspar ... ..	18,021	201,360	19,224	191,982
Fire-clay... ..	166,888	323,105	119,947	359,839
Gold ore... ..	—	—	7	189
Graphite (raw and dressed) ... ..	55	6,550	40	4,760
Iron ore ... ..	4,084,647	21,517,163	4,365,967	23,268,214
Iron and Silicon (Ferro-Silicon) ... ..	200	58,110	235	78,785
Iron pyrites ... ..	15,957	159,570	20,762	207,620
Iron, sulphate ... ..	148	6,648	149	7,175
Manganese ore ... ..	2,297	35,500	1,992	30,040
Manganese ore in powder ... ..	174	7,000	158	7,300
Silver and lead ore ... ..	8,187	174,054	8,397	199,248
Sulphur ... ..	35	2,792	—	—
Zinc ore ... ..	57,634	2,461,925	56,885	3,006,289
Zinc ore (calcined) ... ..	32,427	2,255,715	31,216	2,522,128
Total value in crowns ... ..	—	30,444,994	—	33,044,110
" " £ sterling ... ..	—	£1,672,802	—	£1,815,610

SWEDEN—continued.

TABLE 516.

PERSONS KILLED and INJURED by ACCIDENTS at MINES and FELDSPAR QUARRIES during the Years 1904 and 1905.

Year.			Number of Persons Killed.	Number of Persons Injured.*	Death-rate per 1,000 Persons Employed.
1904	...	...	22	504	1.55
1905	...	...	24	567	1.65

Switzerland.†

That the mineral industries of Switzerland are of little importance is evident from the following tables ; nevertheless the kinds of mineral which are being obtained from underground workings are numerous, viz.: anthracite, bituminous limestone, brown coal, fireclay, gypsum, iron ore, limestone, magnesium sulphate, marble, marl, potstone, salt, sandstone, and slate.

*Anthracite.*—Two mines, Chandoline and Granges, produce annually 1,500 to 2,000 tons of anthracite containing a high percentage of ash.

*Bituminous limestone.*—The asphalt rock of the Val de Travers, which is exported from Switzerland to various countries, is a bituminous limestone of Cretaceous age. The bed is 4 to 8 m. thick, and contains about 10 per cent. of bitumen.

*Brown coal and cement.*—With reference to the Swiss brown coal, which is of Miocene age, it is interesting to learn that seams of only 4 to 6 inches in thickness were worked for many decades near the towns of Zurich and Lausanne, and probably with profit. Nowadays the beds immediately underlying and overlying the coal are worked with it, and are used for making Roman cement, Portland cement, bricks, and manure. Deposits of brown coal are worked at Uznach in the Canton of St. Gall.

*Iron.*—The only workings for iron are at Delsberg.

*Salt.*—Switzerland possesses five workings for salt, viz., Bex salt mine in the Rhone valley ; the brine wells of Rheinfelden, Ryburg, and Kaiseraugst, in the Canton Aargau ; and the brine well Schweizerhalle in the Canton Baselland. The output for 1902 was 50,990 tons.

TABLE 517.

NUMBER of PERSONS EMPLOYED at MINES and UNDERGROUND QUARRIES during the two Years ended 1903 and 1905 respectively.

Kind of Workings.	1902-1903.		1904-1905.	
	Number of Works.	Number of Persons Employed.	Number of Works.	Number of Persons Employed.
Mines ... ..	16	448	12	362
Underground quarries ...	93	1,239	63	1,006
Total ... ..	109	1,687	75	1,368

\* Injuries causing absence from work for 14 days at least.

† *Rapports des Inspecteurs Fédéraux des Fabriques et des Mines dans les années 1904 et 05*, Aarau, 1906: *Notice sur les exploitations minérales de la Suisse*, Geneva, 1896, and information furnished by the Swiss Government.



SWITZERLAND—continued.

TABLE 518.

NUMBER of WORKINGS and PERSONS EMPLOYED, classified according to MINERAL worked during the two Years ended 1905.

Kind of Mineral.	Number of Workings.		Number of Persons Employed.	
	True Mines.	Underground Quarries.	True Mines.	Underground Quarries.
Anthracite ... ..	3	—	57	—
Asphalt ... ..	1	—	80	—
Brown coal ... ..	2	—	16	—
Brown coal and cement stone ... ..				
Gypsum ... ..	—	3	—	46
Iron ore ... ..	1	—	65	—
Lead ore, argentiferous ... ..	3	—	110	—
Limestone... ..	—	16	—	232
Magnesia, sulphate of ... ..	1	—	6	—
Marble ... ..	—	1	—	10
Salt (rock salt) ... ..	1	—	28	—
Sandstone... ..	—	7	—	194
Slate ... ..	—	36	—	524
Total for 1904-1905 ... ..	12	63	362	1,006
Total for 1902-1903 ... ..	16	93	448	1,239

TABLE 519.

QUANTITY of MINERALS produced during the Years 1902, 1903, and 1904.

Mineral.	Year.		
	1902.	1903.	1904.
	Metric Tons.	Metric Tons.	Metric Tons.
Anthracite ... ..	*	*	*
Bituminous limestone ... ..	*	30,000	30,000
Brown coal ... ..	*	*	*
Cement (Portland) ... ..	175,065	*	*
" (Roman) ... ..	17,190	*	*
Fireclay ... ..	*	*	*
Gypsum ... ..	49,807	*	*
Iron ore ... ..	*	*	*
Lime (hydraulic) ... ..	201,174	*	*
Magnesium sulphate ... ..	*	*	*
Marble ... ..	*	*	*
Marl ... ..	*	*	*
Potstone ... ..	*	*	*
Pozzolana ... ..	16,400	*	*
Salt (Bex mine and brine wells) ... ..	50,990	*	*
Sandstone ... ..	*	*	*
Slate ... ..	*	*	*

TABLE 520.

DEATHS from ACCIDENTS at MINES and QUARRIES during the two Years ended 1903 and 1905 respectively.

Kind of Workings.	1902-1903.		1904-1905.	
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.
Mines ... ..	1	2.76	4	2.92
Underground quarries ... ..	—	—		

\* Figures not available.

Tong-King. (See INDO-CHINA.)

Tunis.\*

The principal minerals worked in Tunis at the present time are phosphate of lime, salt, building stone, and the ores of lead and zinc.

*Iron.*†—There are large deposits of iron ore in the Regency, and Consul-General Berkeley considers that they deserve the attention of British ironmasters. Within recent years important mines have been discovered in the north-west of Tunis. A railway has been made from Tunis to Kalâa-Es-Senam which runs close to some of the mines.

*Phosphate of lime.*‡—This mineral is found in the Lower Eocene rocks, especially to the north and south of the mountain chain running from Wady Stah, near Gafsa, to Tamerza ; although at the present time the only active workings are those of Metlaoui, the beds may be followed for a distance of about 40 miles. The crude rock contains from 58 to 62 per cent. of phosphoric acid.

*Salt.*—This mineral is obtained from salt marshes and lakes. The total output of salt in 1905 was 52,900 metric tons, of which 11,600 were produced at salt pans worked by the State and 41,300 tons from five salt lakes. The average value may be reckoned at about 5 francs per ton.

*Zinc ore.*—The lead and zinc mines of Tunis employed about 3,472 workmen in 1905, of whom 1,031 were Europeans, and the total value of their output was £273,400, or £108,840 more than in 1904.

TABLE 521.  
QUANTITY and VALUE of MINERALS produced during the Years 1904 and 1905.§

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	Francs.	Metric Tons.	Francs.
Fireclay ... ..	20,448	49,500	22,500	54,000
Flags ... ..	2,543	31,330	2,510	30,873
Lead ore ... ..	16,800	1,446,000	15,214	1,837,805
Lead and zinc ores mixed ... ..	2,900	89,000	6,041	412,504
Limestone ... ..	46,280	770,398	48,450	811,750
Paving stones ... ..	9,308	129,850	10,120	139,656
Phosphate of lime ... ..	455,197	8,197,748	521,731	9,391,158
Plaster and cement ... ..	13,564	190,988	15,000	216,000
Potter's clay ... ..	5,400	11,080	5,500	5,775
Salt from marshes and salt lakes ... ..	23,600	70,300	52,900	252,439
Sand and gravel ... ..	163,350	217,275	170,400	221,520
Stone (dressed for building) ... ..	293,093	505,158	297,920	600,158
„ (broken) ... ..	313,366	766,532	327,400	993,930
Zinc ore (calcined) ... ..	27,200	2,579,000	37,102	4,583,811
Total value in Francs ... ..	—	15,054,159	—	19,551,379
„ „ in £ sterling ... ..	—	£602,166	—	£782,055

Turkey.||

The mineral resources of the Ottoman Empire are great, but owing to deficient transportation facilities they are almost entirely undeveloped. No official statistics are published.

\* Information furnished by the French Government, and published in the *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1904, and pour l'année 1905.*  
† Consul-General Berkeley, "Trade of the Regency of Tunis for the year 1904." *Dipl. and Cons. Reports*, No. 3492, Ann. Ser. 1905, [Cd. 2682-17]. *Ibid* for 1905, No. 3740, Ann. Ser. 1906 [Cd. 3283-1].  
‡ *Etude des gisements de phosphates de Gafsa et du chemin de fer de Sfax à Gafsa*. Paris, 1896.  
§ Return furnished by the French Government and published in the *Statistique de l'Industrie Minérale en France et en Algérie pour l'année 1904 and pour l'année 1905.*  
|| Dominian, "Mining in Turkey." *Eng. Min. Jour.*, Vol. LXXVIII., No. 5, pp. 184 and 185.



## TURKEY—continued.

*Alum.*—A little alum is manufactured.

*Antimony.*—Antimony mines are worked at Allkhar, near Rozdan, and near Aidin. 63 tons valued at £780 were exported from Smyrna in 1903 and 298 tons valued at £3,585 in 1904.\*

*Arsenic.*†—Orpiment occurs with the antimony ore at Allkhar, near Rozdan, and about 500 tons are exported yearly; there are also some important mines near Yenikuey. Both orpiment and realgar are mined in Macedonia. 270 tons, valued at £4,320, were exported from Salonica in 1900 but only 50 tons in 1902. In 1904 the value of the arsenic exported from Baghdad was £29. The total output of the Turkish mines is about 2,000 tons annually.

*Asphalt.*‡—Bitumen mines are worked at Selenitza, near Valona, and 4,700 tons of mineral valued at from £5 to £20 per ton were exported in 1904. The Dead Sea is reported to contain large quantities of asphalt and it is worked in small quantities in the vicinity of Hesbeya in Syria.

*Boracite.*§—Borate of calcium, known in the trade as boracite and to mineralogists as pandermite, is worked near the port of Panderma in Asia Minor, and also found in the province of Aleppo. 6,000 tons of borax were exported from Panderma in 1904. The total annual output is about 9,000 tons.

*Chrome Ore.*—Chromite is found in many parts of Turkey, occurring in irregular bunches in serpentine. Daghardi mine exports from 12,000 to 15,000 tons yearly by the port of Déréndjé, in the Gulf of Ismidt. Three mines in the Merkenz-Sandjak of Broussa export 6,000 to 7,000 tons a year.§ The quantity exported from Smyrna in 1904 was 838 tons, valued at £2,960,|| and in 1905 from Salonica 5,700 tons, valued at £14,000; from Kossova 3,000 tons, valued at £9,750¶; from Adana chrome ore valued at £2,824.\*\*

*Coal.*—Although coal is known to occur in nearly all the provinces of the Empire, the only mines deserving mention at the present time are those at Eregli. The total sales of these collieries was 450,000 tons in 1905.†† Important deposits of lignite or brown coal exist in the region of the Lebanon, and near Lampsacus on the east side of the Dardanelles.

*Copper.*—Copper ores are worked in various places. The mines produce annually about 5,800 tons of crude copper. The Arghana Maden is the richest copper mine in Turkey; the average ore contains about 30 per cent. of copper. The value of the copper exported from Diarbekr was £36,500 in 1904, and £42,400 in 1905.‡‡ The total output of fine copper in 1905 was about 700 tons.§§

*Emery.*—This mineral was discovered in Asia Minor about fifty years ago; the quantity of emery shipped from Smyrna in 1904 was 13,103 tons, valued at £32,052.||

*Fuller's earth* is quarried on a large scale. The deposits extend over 60 miles in length, and are of varying breadth. The greater part of their area is comprised in the Sandjak of Kutahia, and principally in the Caza of Eskichehir, between the two banks of the Poursaktchai and the left bank of the River Sakaria.§ 2,489 bags of Fuller's earth, valued at £480, were exported from Hodeida in 1904.||||

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† Consular-Assistant Heard, "Trade of Salonica and District for the year 1902." *Dipl. and Cons. Reports*, No. 3100, Ann. Ser., 1903 [Cd. 1766-34]. Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1902-3." *Dipl. and Cons. Reports*, No. 3,171, Ann. Ser., 1904 [Cd. 1786-104], p. 16. Whitehead, "Mining Industries and Forestry in Turkey." *Dipl. and Cons. Reports*, No. 589, Ann. Ser., 1903 [Cd. 1387-2]; and Consul-General Newmarch, "Trade of Baghdad for the year 1904." *Dipl. and Cons. Reports*, No. 3,477, Ann. Ser., 1905 [Cd. 2682-2].

‡ Vice-Consul Du Vallon, "Trade of Consular District of Salonica for the year 1904." *Dipl. and Cons. Reports*, No. 3430, Ann. Ser., 1905 [Cd. 2236-174], and Consul Dickson, "Trade of Palestine for the year 1904." *Dipl. and Cons. Reports*, No. 3410, Ann. Ser., 1905 [Cd. 2236-154].

§ Consul Waugh, "Trade of Constantinople and District for the year 1904." *Dipl. and Cons. Reports*, No. 3357, Ann. Ser., 1905 [Cd. 2236-101]; and Consul Barnham, "Trade of the Vilayets of Aleppo and Adana for the year 1903." *Dipl. and Cons. Reports*, No. 3154, Ann. Ser., 1904 [Cd. 1766-88].

|| Altintop, *op. cit.*

¶ Vice Consul Graves "Trade of Salonica for the year 1905." *Dipl. and Cons. Reports*, No. 3655, Ann. Ser., 1906 [Cd. 2682-180].

\*\* Consul Barnham "Trade of Aleppo for the year 1905." *Dipl. and Cons. Reports*, No. 3582, Ann. Ser., 1906 [Cd. 2682-107].

†† Consul Waugh, "Trade of Constantinople and District for the year 1905." *Dipl. and Cons. Reports*, No. 3533, Ann. Ser., 1906 [Cd. 2682-58], p. 14.

‡‡ Consul Shipley, "Trade of Consular District of Erzeroum for the year 1905." *Dipl. and Cons. Reports*, No. 3652, Ann. Ser., 1906 [Cd. 2682-177].

§§ H. R. Merton & Co., London.

|||| Vice-Consul Richardson, "Trade of Hodeida and Camaran for the years 1902-04." *Dipl. and Cons. Reports*, No. 3497, Ann. Ser., 1905 [Cd. 2682-22].

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‡ *Etude des gisements de phosphates de Gafsa et du Chemin de fer de Sfax à Gafsa*. Paris, 1896.

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\* Altintop, "Trade of Consular District of Smyrna for the Year 1905." *Dipl. and Cons. Reports*, No. 3722, Ann. Ser., 1906 [Cd. 2682-247].

† Consular-Assistant Heard, "Trade of Salonica and District for the year 1902." *Dipl. and Cons. Reports*, No. 3100, Ann. Ser., 1903 [Cd. 1766-34]. Consul-General Cumberbatch, "Trade of Smyrna and District for the Years 1902-3." *Dipl. and Cons. Reports*, No. 3171, Ann. Ser., 1904 [Cd. 1786-104], p. 16. Whitehead, "Mining Industries and Forestry in Turkey." *Dipl. and Cons. Reports*, No. 589, Ann. Ser., 1903 [Cd. 1387-2]; and Consul-General Newmarch, "Trade of Baghdad for the year 1904." *Dipl. and Cons. Reports*, No. 3477, Ann. Ser., 1905 [Cd. 2682-2].

‡ Vice-Consul Du Vallon, "Trade of Consular District of Salonica for the year 1904." *Dipl. and Cons. Reports*, No. 3430, Ann. Ser., 1905 [Cd. 2236-174], and Consul Dickson, "Trade of Palestine for the year 1904." *Dipl. and Cons. Reports*, No. 3410, Ann. Ser., 1905 [Cd. 2236-154].

§ Consul Waugh, "Trade of Constantinople and District for the year 1904." *Dipl. and Cons. Reports*, No. 3357, Ann. Ser., 1905 [Cd. 2236-101]; and Consul Barnham, "Trade of the Vilayets of Aleppo and Adana for the year 1903." *Dipl. and Cons. Reports*, No. 3154, Ann. Ser., 1904 [Cd. 1766-88].

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¶ Vice Consul Graves "Trade of Salonica for the year 1905." *Dipl. and Cons. Reports*, No. 3655, Ann. Ser., 1906 [Cd. 2682-180].

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†† Consul Waugh, "Trade of Constantinople and District for the year 1905." *Dipl. and Cons. Reports*, No. 3533, Ann. Ser., 1906 [Cd. 2682-58], p. 14.

‡‡ Consul Shipley, "Trade of Consular District of Erzeroum for the year 1905." *Dipl. and Cons. Reports*, No. 3652, Ann. Ser., 1906 [Cd. 2682-177].

§§ H. R. Merton & Co., London.

|||| Vice-Consul Richardson, "Trade of Hodeida and Camaran for the years 1902-04." *Dipl. and Cons. Reports*, No. 3497, Ann. Ser., 1905 [Cd. 2682-22].



TURKEY—continued.

*Gold.*—A little alluvial gold is obtained in Thessaly and in some of the valleys of Macedonia. The river Pactolus, so famous in ancient times, no longer yields gold. In 1904 the total quantity of fine gold obtained was about 1,400 ozs. (kilos. 44).\*

*Iron.*—Large deposits of iron ore exist at Beirut-Dagh in the province of Aleppo, but are not worked.†

*Iron Pyrites.*—The Cassandra Mining Company exported 12,900 tons of iron pyrites, valued at £7,600 from Stratonis in 1905.‡

*Manganese.*—There are manganese mines in Macedonia and in Asia Minor, 700 tons of ore were exported from Salonica and 27,900 tons from Stratonis in 1905.‡

*Meerschaum.*—Mining meerschaum is an industry of some importance at Sari-sou, Sépétdji, Gheikli and Menlou, and several thousand persons are employed in digging the stone and preparing it for the market.†

*Petroleum.*—Oil is obtained from wells at Myriofito and Hora on the north coast of the Sea of Marmora.†

*Salt.*—This is a Government monopoly; the mineral is obtained from sea water, brine lakes or springs, and rock salt mines. Extensive beds of salt are located in the region of the Dead Sea in Palestine.§ The rock salt mines are worked near Van in Armenia. 203,128 || tons of salt were produced in the year 1893-4. The tax on salt collected in the Trebizond District in 1903 amounted to about £91,000.¶ Rock salt is also widely distributed over many parts of Tehama. In 1904 the output of rock salt from the Salif Salt Works amounted approximately to 70,000 tons.\*\* 12,516 tons, valued at £40,750 were exported from Smyrna in 1904, and 625 tons from Muskat in 1904-5.††

*Silver-lead.*—Deposits of argentiferous galena are worked at Balia, in the Sandjak of Karassi, and at Avnie, in the Caza of Adramit. The Kodja Gumush mine at Balia produces annually from 4,000 to 6,000 tons of ore, yielding 82 per cent. of lead and from 1½ to 4 per cent. of silver.† The output of fine silver for Turkey in 1904 is stated‡‡ to have been 564,685 ozs. (Kilos. 17,567).

*Zinc Ore.*—Large quantities of calamine are exported from the Island of Thasos.†

United States.§§

The United States are the greatest producers of coal, iron, and copper in the world.

*Coal.*—The total production of coal in 1905 was 356,454,088 metric tons, of which 70,452,554 metric tons were anthracite and 286,001,534 true bituminous coal. More than one-half of the mineral fuel raised in the United States is produced by Pennsylvania. The bituminous coal fields are scattered widely over the United States and include altogether an area of about 335,000 square miles. The anthracite deposits are almost entirely in Pennsylvania and comprise an area of about 484 square miles; Colorado and New Mexico yield very small quantities.

In the case of anthracite there is an increase of 4,085,223 metric tons, and in bituminous coal 33,203,122 metric tons; taking anthracite and bituminous coal together, there is a net increase of more than 37 million metric tons.

\* Annual Report of the Director of the United States Mint for the fiscal year ended 30th June, 1905, Washington, 1905.

† Vice-Consul Waugh, "Trade of Constantinople and District for the year 1901." *Dipl. and Cons. Reports*, No. 2813, Ann. Ser., 1902 [Cd. 786-117], and Consul Barnham, "Trade of the Vilayets of Aleppo and Adana for the year 1903." *Dipl. and Cons. Reports*, No. 3154, Ann. Ser., 1904 [Cd. 1766-88].

‡ Vice-Consul Graves, "Trade of Salonica and District for the year 1905." *Dipl. and Cons. Reports*, No. 3655, Ann. Ser., 1906 [Cd. 2682-180].

§ Dickson, *op. cit.*

|| *Oest. Zeitsch. f. B. u. Huttenwesen*, Vol. XLIV., 1897, p. 223.

¶ Consul Longworth, "Trade of Vilayet of Trebizond for the year 1903." *Dipl. and Cons. Reports*, No. 3160, Ann. Ser., 1904 [Cd. 1766-94].

\*\* Consul Devey, "Trade of Jeddah and Hodeidah for the year 1897." *Dipl. and Cons. Reports*, No. 2203, Ann. Ser., 1899 [C. 9044-29], and Vice-Consul Richardson, *op. cit.*

†† Altintop, *op. cit.*, and Consul Grey, "Trade of Muscat for the year 1904-05." *Dipl. and Cons. Reports*.

‡‡ Annual Report of the Director of the United States Mint for the fiscal year ended 30th June, 1905, Washington, 1905.

§§ Particulars obtained from the Report of the United States Geological Survey, Washington. Many useful statistics relating to the United States, and much valuable information concerning mines and minerals all over the world are contained in the volumes entitled *The Mineral Resources of the United States*, published by the Department of the Interior, Washington; and also in *The Mineral Industry Its Statistics, Technology and Trade*, published by the Proprietors of the Engineering and Mining Journal, New York and London.



UNITED STATES—*continued.*

Great progress has been made in the use of coal-cutting machinery since 1899; in that year the number of machines in use was 3,125 as compared with 9,184 in 1905. According to Table 522, the amount of bituminous coal mined by machines in 1905 was more than 103½ million short tons, or about 94 million metric tons. The output of machine-mined coal in 1905 was 26·31 per cent. of the total.

TABLE 522.  
BITUMINOUS COAL MINED by MACHINES in the UNITED STATES during the  
Years 1901–1905.

States.	Year.				
	1901.	1902.	1903.	1904.	1905.
	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).	Net Tons (2,000 lbs.).
Alabama ... ..	—	—	577,317	741,170	1,584,942
Colorado ... ..	319,678	857,279	1,270,221	945,965	1,247,687
Illinois ... ..	5,774,639	7,112,039	7,381,027	7,110,902	8,697,547
Indiana ... ..	1,852,058	2,421,342	3,334,961	3,681,032	4,207,246
Kentucky ... ..	2,254,711	3,091,626	2,843,805	3,595,513	4,409,054
Montana ... ..	748,981	691,669	693,504	482,924	752,665
Ohio ... ..	9,908,316	12,094,641	14,007,326	13,983,647	16,888,417
Pennsylvania ... ..	29,591,368	35,058,038	37,146,253	35,174,613	49,335,660
West Virginia ... ..	4,817,943	5,738,045	8,193,840	9,526,749	12,504,301
Wyoming ... ..	804,826	588,302	783,822	1,053,702	1,236,759
Other States producing less than half a million tons each annually.	1,770,815	1,958,601	1,742,818	2,310,780	2,532,174
Total ... ..	57,843,335	69,611,582	77,974,894	78,606,997	103,396,452

The kinds of machines employed are set forth in the following table.

TABLE 523.  
COAL-CUTTING MACHINES employed in the UNITED STATES in the Year 1905, arranged  
according to their mode of action.

State.	Chain Machines.	Percussive Machines.	Long Wall Machines.	Total.
Alabama ... ..	42	171	—	213
Arkansas ... ..	—	—	—	—
Colorado ... ..	42	74	5	121
Georgia ... ..	—	6	—	6
Illinois ... ..	123	758	1	882
Indiana ... ..	362	142	2	506
Indian Territory ... ..	4	25	—	29
Iowa ... ..	9	9	14	32
Kansas ... ..	—	10	—	10
Kentucky ... ..	144	381	2	527
Maryland ... ..	—	42	—	42
Michigan ... ..	16	90	—	106
Missouri ... ..	2	—	28	30
Montana ... ..	3	55	—	58
New Mexico ... ..	—	—	—	—
North Dakota ... ..	9	—	—	9
Ohio ... ..	878	128	35	1,041
Pennsylvania ... ..	1,232	3,020	2	4,254
Tennessee ... ..	12	77	—	89
Texas ... ..	—	5	3	8
Utah ... ..	—	—	—	—
Virginia ... ..	25	10	—	35
West Virginia ... ..	628	473	4	1,105
Wyoming ... ..	26	49	6	81
Total ... ..	3,557	5,525	102	9,184



## UNITED STATES—continued.

*Copper.*—There are three great copper States : Montana, Arizona, and Michigan ; the first furnished in 1905 about 34.9, the second 26.2, and the third 25.5 per cent. of the total output of the whole country, which was 409,103 metric tons of metal, equal to more than half of the world's production.

*Gold.*—The principal gold-producing States are Colorado with a yield in 1905 of 1,243,291 ozs., California 928,660 ozs., and South Dakota 334,460 ozs. The output of Alaska Territory was 722,026 ozs.

*Igneous rocks.*—The value of granite, &c., quarried in 1905 amounted to \$20,637,693. The principal producing States are California, Georgia, Maine, Massachusetts, New Hampshire, and Vermont.

*Iron.*—The total output of iron ore for the United States during the year 1905, is the greatest on record, and exceeded the previous maximum output, which was in 1902, by 20 per cent. More than three-fourths of the iron is obtained from the States of Minnesota and Michigan ; the former produced more than 22 million metric tons of ore in 1905, and the latter more than 11 million tons. The total output of ore from the United States was 43 million metric tons, an increase of 15 million tons compared with 1904 : about 88 per cent. of the ore is red hematite.

*Lead.*—Idaho was again the greatest producer in 1905, followed by Colorado and Utah ; the total production of 273,973 metric tons shows a decrease of 4,536 metric tons on that of the previous year.

*Marble.*—The value of the total output of marble in 1905 amounted to \$7,129,071 ; of this amount Vermont contributed \$4,410,820, or nearly two-thirds.

*Mineral Waters.*—The output of all the mineral springs in the United States amounted to 47,590,081 gallons, valued at \$6,811,611. The number of producing springs in 1905 was 731. The leading State as regards quantity produced was Minnesota, but Wisconsin ranked first in total value.

*Natural Gas.*—At the close of the year 1905 there were 17,114 boreholes producing natural gas. The value of the output of the year was \$41,562,855, or 3 million dollars more than in 1904.

*Petroleum.*—The oil production of the United States comes from 5 great fields and a few scattered States. The yield of the oil-wells has more than doubled within the past six years, the increase being in the heavier grades of the fuel class, but the development of the Mid-Continent field, which includes Missouri, Kansas, Oklahoma and Indian Territory, and the extension into Illinois of the Lima-Indiana field indicate a great increase in the future production of the lighter grades of oil. In 1905 the production was 134,717,580 barrels of 42 gallons, or 33½ million barrels more than the previous year.

The principal oil-producing States are California, Texas, Ohio, West Virginia, Pennsylvania, Indiana, Kansas, Louisiana, Indian Territory and Oklahoma.

*Phosphate of Lime.*—The most important beds of phosphate rock are those of Florida, from which more than three-fifths of the total tonnage is produced. The other principal phosphate States are South Carolina and Tennessee, with a production in 1905 of 270,223 and 482,859 tons respectively.

*Quicksilver.*—This mineral is obtained in California, Texas, Utah and Oregon. The first-named State produced in 1905 about four-fifths of the total output.

*Salt.*—The salt of the United States is obtained from beds of rock salt of Upper Silurian age, from brine wells, and by evaporation of sea water. Michigan is at present the chief salt-producing State. In 1905 the total production of the whole country amounted to 25,966,122 barrels, of which Michigan contributed 9,492,173 barrels.

*Silver.*—The silver yield for 1905 amounted to 56,101,594 ozs., or 101,730 ozs. more than in the previous year. The States producing over a million ounces at present are Montana with 13¼, Colorado 11½, Utah 11, Idaho 8½, Nevada 6½, Arizona 2½, and California more than 1 million ounces.

*Zinc.*—The production of zinc in the United States in 1905 was 184,931 metric tons, or more than double that of 1897 ; Colorado, Kansas, Illinois, Missouri, and New Jersey were the principal producing States.

It is beyond the province of this Report to enter into minute details concerning each individual State ; but a few facts relating to those in which mining is one of the important industries may with propriety be inserted from time to time.

## PENNSYLVANIA.\*

The most important mining State is Pennsylvania, which produced 119,361,514 short tons (108,284,055 metric) of bituminous coal in 1905, as against 99,600,167 (90,356,679 metric) in 1904, and 78,647,020 short tons (71,348,109 metric) of anthracite, as against

\* Report of the Bureau of Mines of the Department of Internal Affairs of Pennsylvania, 1905, Harrisburg, 1906.



## UNITED STATES—continued.

73,594,369 (66,764,374 metric). The total increase in the output for the year was 24,813,998 short tons (22,511,111 metric).

The number of persons employed in and about mines of bituminous coal in 1905 was 164,941, and in and about anthracite mines 168,254.

The death-rate per 1,000 persons employed in and about bituminous mines was 2.90, and in and about anthracite 3.83; and the death-rate from accidents underground per 1,000 persons employed underground in all coal mines was 3.94: 60 per cent. of the total deaths at bituminous and anthracite mines in 1905 were due to falls of ground as against 42 per cent. in 1904.

## ILLINOIS.\*

This State comes second among the coal-producing States, though a very long way behind Pennsylvania. The output of Illinois for the year ending 30th June 1905 was 37,183,374 short tons (33,732,536 metric) or an increase of 105,477 short tons (95,688 metric) compared with 1904.

The death-rate from accidents in 1904-5 was 3.4 per 1,000 persons employed: 40 per cent. of the deaths were caused by falls of ground. The average death-rate for the 23 years 1883-1905 is 2.34, whilst the output in 1905 was more than three times that of 1883.

The amount of coal cut by machinery during the year 1904-05 was 8,202,066 short tons, and 784 machines were employed.

TABLE 524.

PERSONS EMPLOYED at COAL MINES in the various STATES during the Years 1904 and 1905.†

State.	1904.‡		1905.	
	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.	Average Number of Persons Employed.	Short Tons of Coal raised per Person Employed.
Alabama...	17,811	632	19,595	606
Arkansas...	4,580	439	4,192	462
California...	168§	470	144§	561
Colorado...	8,123	820	11,020	801
Georgia...	906	431	816	433
Idaho...	32¶	104	37¶	159
Illinois...	54,685	667	58,053	663
Indiana...	19,587	554	25,323	470
Indian Territory...	8,487	360	7,712	379
Iowa...	15,629	417	15,113	450
Kansas...	12,198	519	11,926	539
Kentucky...	14,235	532	14,685	574
Maryland...	5,671	849	5,948	859
Michigan...	3,549	378	3,696	399
Missouri...	10,137	411	8,962	445
Montana...	2,505	543	2,181	754
New Mexico...	1,849	786	2,108	783
North Dakota...	554	487	626	507
Ohio...	43,634	559	43,399	589
Oregon...	334	152	316	347
Pennsylvania	155,861 135,100	469	165,406	470
		725	143,629	824
Tennessee...	10,416	459	12,198	489
Texas...	2,921	409	3,008	399
Utah...	1,374	1,087	1,361	979
Virginia...	5,165	660	5,730	746
Washington...	5,287	594	4,765	601
West Virginia...	47,235	686	48,389	781
Wyoming...	5,660	915	5,977	937
Total for United States...	593,693	592	626,315	627

\* Twenty-fourth Annual Coal Report for the year ending 30th June, 1905, prepared by the Illinois Bureau of Labor Statistics, Springfield, Ill., 1906.

† Particulars obtained from the Report of the United States Geological Survey, Washington.

‡ Revised figures.

§ Includes Alaska.

|| Includes North Carolina.

¶ Includes Nevada.

UNITED STATES—continued.

TABLE 525.

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES, 1904 and 1905.\*

Product.	Customary Measures.	1904			1905.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
<i>Non-Metallic.</i>							
Arsenious oxide .. .. .	Pounds .. ..	73,413	33	\$ 3,185	1,507,386	684	\$ 35,210
Asbestos .. .. .	Short tons ..	1,480	1,343	25,740	3,109	2,830	42,975
Asphaltum .. .. .	" .. ..	108,572	98,496	879,886	115,267	104,570	768,158
Barytes .. .. .	" .. ..	65,727	59,627	174,968	43,235	43,759	148,803
Bauxite .. .. .	Long tons ..	47,681	48,426	235,704	48,129	48,902	240,282
Borax .. .. .	Short tons ..	—	—	—	—	—	—
{ refined	Short tons ..	—	—	—	—	—	—
{ crude	" .. ..	45,847	41,411	668,810	46,334	42,034	1,019,154
Bromine .. .. .	Pounds .. ..	897,100	407	269,130	1,192,758	541	178,914
Building stone .. .. .	" .. ..	—	—	58,765,715	—	—	63,798,748
Cement .. .. .	Bla.; .. ..	31,675,257	5,512,640	26,081,920	40,102,308	6,912,309	35,981,533
Chromic iron ore .. .. .	Long tons ..	123	125	1,845	25	25	375
Olay products .. .. .	" .. ..	—	—	131,023,248	—	—	149,697,138
Coal, anthracite; .. .. .	Long tons ..	65,318,490	66,367,331	138,974,090	69,339,152	70,452,554	141,879,000
" bituminous .. .. .	Short tons ..	278,656,689	252,798,412	305,397,001	315,259,491	286,001,534	334,877,363
Cobalt oxide .. .. .	Pounds .. ..	22,000	10	42,800	—	—	—
Corundum and emery .. .. .	Short tons ..	1,916	1,738	56,985	2,126	1,929	61,464
Feldspar .. .. .	" .. ..	45,188	40,994	266,326	55,419	52,132	226,157
Fibrous talc .. .. .	" .. ..	64,005	58,085	507,400	56,500	51,256	445,008
Flint .. .. .	" .. ..	52,270	47,419	100,590	51,145	46,398	104,109
Fluorspar .. .. .	" .. ..	36,452	33,089	234,755	57,385	52,059	362,498
Fuller's earth .. .. .	" .. ..	29,480	26,744	166,500	25,178	22,941	214,497
Garnet (abrasive) .. .. .	" .. ..	3,854	3,496	117,581	5,050	4,581	148,005
Graphite .. .. .	Pounds .. ..	5,681,177	2,577	321,872	6,036,587	2,736	318,211
{ Crystalline	Short tons ..	16,927	15,356	—	21,953	19,916	—
{ Amorphous	" .. ..	—	—	881,527	—	—	777,806
Grindstones .. .. .	" .. ..	—	—	—	—	—	—
Gypsum .. .. .	Short tons ..	940,917	853,594	2,784,325	1,043,202	946,396	3,039,227
Infusorial earth and Tripoli .. .. .	" .. ..	6,274	5,692	44,164	10,977	9,958	64,637
Lime .. .. .	" .. ..	—	—	10,414,584	—	—	11,913,741
Limestone for iron flux .. .. .	Long tons ..	1	1	1	1	1	1
Lithium .. .. .	Short tons ..	577	523	5,155	21	19	252
Magnetite .. .. .	" .. ..	2,850	2,586	9,298	3,933	3,596	15,321
Manganese ore .. .. .	Long tons ..	3,146	3,197	29,496	4,118	4,184	38,214
Marls .. .. .	Short tons ..	18,969	17,227	13,145	38,036	34,497	16,494
Mica .. .. .	Pounds .. ..	688,358	303	109,482	861,800	388	126,908
{ Sheet	Short tons ..	1,096	994	10,854	856	777	15,255
{ Scrap	" .. ..	—	—	37,338	—	—	37,974
Millstones .. .. .	" .. ..	—	—	—	—	—	—
Mineral waters .. .. .	Gallons sold ..	50,723,500	—	7,198,450	47,590,081	—	6,811,611
{ Litres .. ..	230,460,092	—	—	—	216,223,534	—	—
Monazite .. .. .	Pounds .. ..	745,999	338	85,038	1,352,418	613	163,908
Natural gas .. .. .	" .. ..	—	—	38,496,780	—	—	41,562,855
Oilstones .. .. .	" .. ..	—	—	188,985	—	—	244,546
Paints, mineral .. .. .	Short tons ..	52,336	47,479	493,434	56,599	51,246	724,933
Petroleum .. .. .	Bla., 42 gals. ..	117,080,980	—	101,175,455	134,717,580	—	84,157,399
{ Litres .. ..	22,342,001,823	—	—	—	25,707,513,997	—	—
Phosphate rock .. .. .	Long tons ..	1,874,428	1,904,526	6,580,875	1,947,190	1,978,457	6,783,403
Precious stones .. .. .	" .. ..	—	—	324,300	—	—	326,350
Pumice .. .. .	Short tons ..	1,530	1,388	5,421	1,832	1,662	5,540
Pyrites .. .. .	Long tons ..	333,542**	338,898**	3,478,568**	253,000	267,062	938,492
Quartz (Crystalline) .. .. .	Short tons ..	31,910	28,976	74,850	19,039	17,272	86,118
Rutile .. .. .	Pounds .. ..	—	—	7,000	—	—	—
Sand, Glass .. .. .	Short tons ..	858,719	779,025	796,492	1,030,334	934,713	1,083,730
Sand Moulding Building, &c. .. .. .	" .. ..	—	—	4,951,607	22,144,633	20,089,479	10,115,915
Salt .. .. .	Bla., 280 lbs. ..	22,030,002	2,797,968	6,021,222	25,966,122	3,297,884	6,096,922
Slate .. .. .	" .. ..	—	—	5,617,195	—	—	5,496,207
Soapstone .. .. .	Short tons ..	27,184	24,661	433,331	40,134	36,409	637,062
Sulphur .. .. .	" .. ..	††	††	††	181,677	164,816	3,706,590
Uranium and Vanadium .. .. .	" .. ..	45	41	10,600	4	4	575
Zinc, white .. .. .	" .. ..	63,363	57,483	4,808,482	68,603	62,236	5,520,240
Zircon .. .. .	Pounds .. ..	‡‡	‡‡	‡‡	‡‡	‡‡	‡‡
Total value of non-metals in \$ .. .. .	.. ..	—	—	859,383,604	—	—	921,034,019
Total value of non-metals in £ sterling. .. .. .	.. ..	—	—	£176,464,806	—	—	£189,121,975

\* Official Return furnished by the United States Geological Survey, Washington. In the case of certain minerals, including coal, the figures for 1904 have been revised.  
† The United States Geological Survey Department calculates on the basis of 2,204.6 lbs. = 1 metric ton.  
‡ In 1904 barrels of 300 lbs. for natural rock cement, and of 400 lbs. for artificial Portland cement. The output of Portland Cement in 1904 was 26,505,881 barrels. In 1905 barrels of 380 lbs. net.  
§ Represents production from Pennsylvania only.  
|| Included under the heading of "Building stone."  
\*\* Including Zircon.  
\*\*\* Including sulphur.  
†† Included with "Pyrites."  
‡‡ Included with "Monazite."



UNITED STATES—*continued.*TABLE 525—*continued.*

QUANTITY and VALUE of MINERALS and METALS produced in the UNITED STATES,  
1904 and 1905—*continued.*

Product.	Customary Measures.	1904.			1905.		
		Quantity.		Value at Place of Production.	Quantity.		Value at Place of Production.
		Customary Measures.	Metric Tons.		Customary Measures.	Metric Tons.	
<i>Metallie.</i>				\$			\$
Aluminium .. .. .	Pounds .. ..	8,600,000	3,901	2,477,000	11,347,000	5,147	3,246,300
Antimony .. .. .	Short tons ..	3,067	2,773	505,534	3,240	2,930	705,787
Copper .. .. .	Pounds .. ..	812,537,267	368,564	105,829,845	901,907,843	409,103	138,795,716
Gold (fine) .. .. .	Troy ounces ..	3,910,729	—	80,835,648	4,265,742	—	88,180,711
	Kilos. .. ..	121,637			132,680		
Iron, pig .. .. .	Long tons ..	16,497,033	16,761,931	233,025,000	22,902,380	23,361,570	382,450,000
Lead .. .. .	Short tons ..	907,000	278,509	26,402,000	302,000	275,873	28,890,000
Nickel .. .. .	Pounds .. ..	24,000	11	11,400	—	—	—
Platinum .. .. .	Troy ounces ..	200	—	4,160	318	—	5,320
	Kilos. .. ..	6			10		
Quicksilver .. .. .	Flasks* .. ..	34,570†	1,188	1,503,795	30,451	1,086	1,103,120
Silver (fine) .. .. .	Troy ounces ..	55,999,864	—	32,035,378	56,101,594	—	34,231,972
	Kilos. .. ..	1,741,792			1,744,956		
Zinc .. .. .	Short tons ..	188,702	169,375	18,670,200	203,849	181,931	24,034,182
Total value of metals in \$ .. .. .	.. .. .	—	—	501,099,950	—	—	702,463,108
" " " £ sterling .. .. .	.. .. .	—	—	£102,885,267	—	—	£144,240,885
Estimated value of products unspecified. .. .. .	.. .. .	—	—	\$400,000	—	—	\$400,000
Total value in \$ .. .. .	.. .. .	—	—	1,360,883,554	—	—	1,623,877,127
" " " £ sterling.. .. .	.. .. .	—	—	£279,442,209	—	—	£333,444,996

The following tables give further details concerning the output of coal and iron ore:—

TABLE 526.

COMPARATIVE OUTPUT of COAL for the Years ending December 31st, 1904 and 1905, in the principal COAL-PRODUCING STATES.†

State.	1904.	1905.	Comparison with preceding Year.
	Metric Tons.	Metric Tons.	Metric Tons.
Illinois ... ..	33,089,957	34,867,425	+ 1,777,468
Ohio ... ..	22,167,116	23,181,484	+ 1,014,368
Pennsylvania‡ { Anthracite ...	66,764,374	71,348,109	+ 4,583,735
	90,356,679	108,284,055	+ 17,927,376
West Virginia ... ..	29,577,083	34,284,296	+ 4,707,213

\* Flasks of 76½ lbs. up to 1st June, 1904, and of 75 lbs. since that date.

† Particulars obtained from the Report of the United States Geological Survey, Washington.

‡ Report of the Bureau of Mines of the Department of Internal Affairs of Pennsylvania, 1905, Harrisburg, 1906.

UNITED STATES—continued.

TABLE 527.  
PRODUCTION of IRON ORES.\*

State.	Red Hematite.	Brown Hematite.	Magnetite.	Carbonate.	Total.
	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.	Metric Tons.
Minnesota...	22,084,191	—	—	—	22,084,191
Michigan ...	11,060,701	—	—	—	11,060,701
Alabama ...	3,022,174	794,111	27,288	—	3,843,573
Other States ...	1,975,928	1,793,444	2,428,801	22,352	6,220,525
Total for 1905 ...	38,142,994	2,587,555	2,456,089	22,352	43,208,990
„ 1904 ...	24,222,276	2,181,266	1,665,161	19,520	28,088,223

TABLE 528.

DEATHS from ACCIDENTS at COAL MINES in the various STATES, during the Years 1904 and 1905.†

State.	1904.			1905.		
	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.	Number of Persons Killed.	Death-rate per 1,000 Persons Employed.	Metric Tons of Mineral raised per Life lost.
Alabama ...	84	4.71	121,749	185	10.74	58,355
Arkansas ...	—	—	—	8	1.91	219,390
California...	Nil.	—	—	Nil.	—	—
Colorado ...	89	10.96	69,075	59	5.35	135,717
Georgia ...	†	—	—	†	—	—
Illinois§ ...	157	2.87	214,247	199	3.36	169,510
Indiana ...	34	1.91	263,417	47	2.53	212,244
Indian Territory ...	30	3.63	93,617	42	5.50	64,537
Iowa ...	25	1.42	246,975	24	1.59	256,986
Kansas§ ...	31	3.00	159,929	36	2.97	159,960
Kentucky ...	20	1.46	322,444	31	2.06	235,246
Maryland ...	10	1.67	434,588	13	2.09	357,278
Michigan ...	†	—	—	8	2.16	167,061
Missouri ...	11	1.09	339,430	†	—	—
Montana ...	9	3.60	156,570	7	2.96	225,991
New Mexico ...	17	8.58	87,413	7	3.30	212,628
North Carolina ...	†	—	—	†	—	—
North Dakota ...	†	—	—	†	—	—
Ohio ...	118	2.57	189,002	114	2.58	205,588
Pennsylvania { Anthracite ...	595	3.69	112,209	644	3.83	110,789
	536	3.44	168,576	479	2.90	226,063
Tennessee ...	28	2.81	157,050	29	2.76	173,699
Texas ...	†	—	—	†	—	—
Utah ...	9	4.06	157,577	7	5.13	172,674
Virginia ...	22	5.10	105,451	†	—	—
Washington ...	31	6.69	85,033	13	2.55	198,105
West Virginia§ ...	140	8.33	195,843	194	3.88	164,052
Wyoming ...	†	—	—	12	2.01	423,510
Total and average for States for which figures have been received.	1,996‡	3.35	154,281	2,158¶	3.45	159,426

It will be seen by the above table (528) that there were 162 more deaths in 1905 than in the previous year. This increase is mainly accounted for by 111 deaths, the result of

\* Particulars obtained from the Report of the United States Geological Survey, Washington.  
† Compiled from the Reports of Inspectors of Mines for the various States, *Mineral Resources of the United States*, 1905, published by the United States Geological Survey, Washington, 1907, and *Eng. Min. Jour.*, Vol. LXXX., No. 22, 1905, p. 1014.  
‡ No report.  
§ For Fiscal Years ended June 1904 and 1905.  
|| Excluding Arkansas, Georgia, Michigan, North Carolina, North Dakota, Texas, and Wyoming.  
¶ Excluding Georgia, Missouri, North Carolina, North Dakota, Texas, and Virginia.



UNITED STATES—*continued.*

a serious coal dust explosion which occurred in the Virginia Coal Mine, Alabama, during the year. The Inspector states that every man in the mine was either killed by the explosion or died from the afterdamp.

Complete statistics concerning the fatalities at ore mines are lacking.

There were 22 deaths from accidents,\* equivalent to 4.35 per 1,000 persons employed, at the iron mines in Marquette County, Michigan, during the year ended 30th September, 1905.

The number of persons killed at metalliferous mines of Colorado† was 67 in 1903 and 101 in 1904, and the death-rates were 1.04 and 1.43 respectively.

In the metalliferous mines of Montana‡ there were 41 persons killed in 1904, and 48 in 1905, and the death-rate, 2.83 per 1,000 persons employed, was the same for both years.

In the lead and zinc mines of the State of Missouri§ 21 fatalities happened in the year 1903 and 30 in 1904, and the death-rates were 1.69 and 2.44 per 1,000 persons employed respectively.

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United States Possessions.—(See CUBA, PHILIPPINE ISLANDS, AND PORTO RICO.)

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## Uruguay.¶

The number of persons employed at mines and quarries in the Republic of Uruguay is unknown. Auriferous quartz appears to be the principal mineral worked at present; the quantity of gold obtained in 1905 was only 70 kilos, so that the number employed in mining cannot be large.

Prospecting for gold is reported to be taking place with satisfactory results in the district in which the Cuñapirú mines are situated, in the department of Rivera; copper is also being sought for.¶¶

TABLE 529.

QUANTITY and VALUE of GOLD produced in 1904 and 1905.

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
Gold ... ..	Kilos. 65**	£ 6,096	Kilos. 70**	£ 6,556

## Venezuela.††

According to official statements the country abounds in asphalt, coal, petroleum, salt, and sulphur, as well as in the ores of copper, gold, iron, lead, silver, and tin; but these rich mineral resources are almost entirely neglected.

\* Annual Report of the Inspector of Mines for Year ending 30th September 1905. Ishpenning, 1906.

† Information furnished by the Commissioner of Mines, Denver.

‡ Biennial Report of the Inspector of Mines of the State of Montana for the years 1905-6, Helena, 1906, and information furnished by the State Coal Mine Inspector.

§ Sixteenth Annual Report of the State Lead and Zinc Mine Inspector of the State of Missouri for the year ending 31st December, 1903, Jefferson City, 1904, and information furnished by the State Mine Inspector.

¶ Return furnished by the "Dirección General de Estadística. Sección Industrial y de Minas," Montevideo.

¶¶ Consul Kestell-Cornish "Trade and Finances of the Republic of Uruguay for the year 1905." Dipl. and Cons. Reports, No. 3,735, Ann. Ser. 1906 [Cd. 2682-260].

\*\* Fine Gold 70 ‰, Fine Silver 30 ‰.

†† Information furnished by the Director of Statistics, Caracas.

## VENEZUELA—continued.

*Asphalt.*—The quantities exported during the year 1905 were as follows:—From Maracaibo 7,832 metric tons, valued at £29,848, and from Cristobal Colon 22,841 metric tons valued at £22,765.

Most of the asphalt was consigned to the United States, and the remainder to Holland and Dutch Colonies.

*Coal.*—In the State of Falcon there are coal deposits at El Isirio, near Coro, and the coal therefrom is being used for the Venezuelan Gunboats.\*

*Copper Ore.*—The Aroa copper mines, situated between Barquisimeto and Tucacas, are being reopened.\* 100 metric tons of copper ore, valued at £1,428 were exported in 1905, chiefly to Europe.

*Gold.*—Consul de Lemos in his report† states that the gold mining industry has remained stationary during the year 1905, and no improvement can be reported. The precious metal is obtained mainly from quartz veins in the Caratal or Yuruari district.

*Iron.*—The deposits of iron ore at Imataca, on the Lower Orinoco, are not yet being worked. Haematite containing 65 per cent. of iron has been discovered in large quantities at Manoa, near the river Amacuro.

*Salt* was a Government monopoly, but a concession has now been granted to the Venezuelan Salt Monopoly, Limited, which is understood to be financed by a group of British capitalists; the quantity obtained in 1902 was 10,153 metric tons, valued at 2,842,860 bolivares (£112,589), and in the year ending June, 1904, 7410 metric tons, valued at 741,087 bolivares (£29,350).

*Sulphur.*—A small quantity of sulphur (17 tons, valued at £40) was shipped from a mine at Carupano in 1903–4.

TABLE 530.

QUANTITY and VALUE of MINERALS produced during the years ending June 1904 and 1905.

Mineral.	1904.		1905.	
	Quantity.	Value.	Quantity.	Value.
	Metric Tons.	£	Metric Tons.	£
Asphalt ... ..	13,519‡	54,076	30,673‡	52,613
Gold ore (exported) ...	—	—	100	1,428
Gold (fine) ... ..	Kilos. 262§	30,708	Kilos. 621	60,163
Salt ... ..	7,410	29,350	—	—
Sulphur ... ..	17	40	—	—

Although a new mining law is reported to have been passed by the Congress in 1905, it has not yet been put into force. The new law empowers the Executive to assess by Ordinances the taxes and imposts which the mines will have to pay, and also to regulate in the same manner most other matters connected with the mining industry.¶

\* Vice-Consul Haggard, "Trade of the Consular District of Caracas for the Year 1905," *Dipl. and Cons. Reports*, No. 3,657, Ann. Ser., 1906 [Cd. 2682–182].

† "Trade of Ciudad Bolívar for the Year 1905." No. 3,558, Ann. Ser., 1906 [Cd. 2682–83].

‡ Quantity exported.

§ Quantity exported during half-year ending 31st December, 1904.

¶ Not ascertained.

¶ Consul Lemos, *op. cit.*



## INDEX.

A.		Page.
ABERDEEN, Clay	...	154, 170
"	Coke	194
"	Gravel and sand	154, 209
"	Igneous rocks	154, 212
"	Sandstone	155, 264
"	Coking ovens	196
"	Persons employed	66, 155
Abyssinia, Mineral Output	...	295, 362
Accidents, Fatal, at Mines in the United Kingdom	...	7, 9, 67-93, 296, 297, 301
"	"	Mines under the Coal Mines Act
"	"	Mines under the Metalliferous Mines Act
"	"	Quarries under the Quarries Act
"	"	in the several Coal-fields
"	"	at Coal Mines
"	"	Boiler explosions
"	"	Descent or ascent
"	"	Explosions of Fire-damp or Coal-dust
"	"	Explosives
"	"	Falls of ground
"	"	Haulage
"	"	in the several Inspection districts
"	"	at Iron Mines
"	"	Irruptions of water
"	"	Miscellaneous underground
"	"	"
"	"	on surface
"	"	Machinery
"	"	at "other Mines" than Coal and Iron
"	"	Overwinding
"	"	Railways, sidings, &c.
"	"	Ropes and chains breaking
"	"	Shafts
"	"	Suffocation by natural gases
"	"	Surface
"	"	Trams and tubs
"	"	Underground fires
"	"	Bold Colliery
"	"	Broughton Moor Colliery
"	"	Cambrian Collieries
"	"	East Ince Hall Colliery
"	"	Elba Colliery
"	"	Holytown, No. 13 Pit...
"	"	Llanhilleth Colliery
"	"	Lletty Shenkin Colliery
"	"	National Colliery
"	"	Newbattle Colliery
"	"	Pelton Colliery
"	"	Ty Trist, No. 2, Colliery
Accidents, Fatal, at Mines in—		
	Algeria	296, 364
	Australia	296, 304
	Austria	296, 370-373
	Belgium	296, 381
	Bohemia	373
	Bosnia and Herzegovina	296, 376
	British Columbia...	296, 325

Accidents, Fatal, at Mines in—cont.		Page.
	British Guiana	296, 319
	British New Guinea	296, 320
	Bulgaria	296, 384
	Cape Colony	296, 330-332
	Ceylon	296, 334
	Federated Malay States...	296, 337
	France	296, 400
	German Empire	296, 408-410
	Gold Coast	296, 338
	Greece	296, 420
	Greenland	391
	Holland	296, 422
	Hungary	296, 375
	India	296, 343, 344
	Italy	296, 427
	Japan	296, 430
	Kimberley...	330-332
	Mexico	296, 433
	Natal	296, 346
	Newfoundland	296, 348
	New South Wales	296, 304, 306
	New Zealand	296, 350
	Norway	296, 436
	Nova Scotia	296, 326
	Ontario	296, 327
	Orange River Colony	296, 352
	Portugal	296, 442
	Prussia	414-417
	Quebec	296, 328
	Queensland	296, 304, 309
	Rhodesia	296, 353
	Russia	296, 449
	Saxony	418
	Servia	296, 451
	Spain	296, 455
	Sweden	296, 458
	Switzerland	296, 459
	Tasmania	296, 304, 312
	Transvaal	296, 356, 357
	Trinidad	296, 360
	United States	296, 468, 469
	Victoria	296, 304, 313
	Western Australia	296, 304, 315
"	"	Driefontein Deep Gold Mine
"	"	Helen Mine, Bohemia...
"	"	Kolar Goldfields
"	"	Nandidroog Mine, India
"	"	Virginia Coal Mine
"	"	Prussian Collieries
"	"	at Quarries :
"	"	in United Kingdom
"	"	from Blasting
"	"	at different kinds of Quarries
"	"	during descent or ascent
"	"	Explosives...
"	"	Falling from ledges
"	"	Falling from paths, steps, or ladders
"	"	Falls of ground
"	"	Inclined and engine planes
"	"	in the several Inspection districts
"	"	Machinery





	Page.
Arsenic refiners ... ..	162
Arsenical pyrites, Output of :	
United Kingdom ... ..	10, 40, 133, 160, 300
Italy ... ..	427
Portugal ... ..	442
Saxony ... ..	418
Spain ... ..	454
Arsenious oxide, Output of United States ... ..	466
Aruba, Mineral Output ... ..	394
Asbestos, Output of :	
Canada ... ..	323
Quebec ... ..	328
Asbestos, Output of :	
Canada ... ..	323
Cape Colony ... ..	329
France ... ..	400
Quebec ... ..	328
Russia ... ..	447
United States ... ..	466
Asphalt, Output of :	
Austria ... ..	369
Colombia ... ..	388
Cuba ... ..	390
German Empire ... ..	405
Hungary ... ..	374
Italy ... ..	427
Japan ... ..	429
Mexico ... ..	432
Prussia ... ..	413
Russia ... ..	447
Spain ... ..	454
Trinidad ... ..	359
Turkey ... ..	461
United States ... ..	466
Venezuela ... ..	470
Australia, Accidents ... ..	296, 297, 304
" Mineral Output ... ..	295, 303
" Persons Employed ... ..	294, 302
Austria, Accidents ... ..	296, 370-373
" Mineral output ... ..	295, 369, 370
" Persons employed ... ..	294, 367, 368
" Firedamp Commission ... ..	373
Ayrshire, Briquettes ... ..	196
" Clay ... ..	154, 170
" Coal ... ..	154, 175, 178
" Coke ... ..	194
" Gravel and sand ... ..	154, 209
" Igneous rocks ... ..	154, 212
" Iron ore ... ..	154, 215, 216
" Limestone ... ..	155, 250
" Sandstone ... ..	155, 264
" Blast furnaces ... ..	224, 230
" Coal traffic ... ..	184
" Coking ovens ... ..	196
" Death rate from accidents ... ..	92
" Persons employed ... ..	57, 60, 63, 66, 92, 155

## B.

BAHAMAS, Output of Salt ... ..	295, 315
" Persons employed ... ..	315
Banca, Output of Tin ... ..	391
" Persons employed ... ..	391
Banff, Coke ... ..	194
" Gravel and sand ... ..	154, 209
" Igneous rocks ... ..	154, 212
" Limestone ... ..	155, 250
" Sandstone ... ..	155, 264
" Persons employed ... ..	86, 155
Barbados, Minerals obtained in ... ..	315

	Page.
Barium sulphate, Output of :	
United Kingdom ... ..	163-165
Spain ... ..	454
Barytes, Output of :	
United Kingdom ... ..	10, 40, 133, 163-165, 300
Bavaria ... ..	411
Belgium ... ..	380
Canada ... ..	323
France ... ..	399
Newfoundland ... ..	347
Nova Scotia ... ..	326
Saxony ... ..	417
United States ... ..	466
Basalt, diorite, &c. ( <i>see also</i> Igneous rocks), Output of	
Bavaria ... ..	411
Basic iron produced in United Kingdom ... ..	225
Basutoland, Minerals ... ..	316
Bauxite, Output of :	
United Kingdom ... ..	10, 40, 133, 166, 300
France ... ..	399
United States ... ..	466
Bavaria, Mineral output ... ..	411, 412
" Persons employed ... ..	411
Bechuanaland Protectorate, Minerals ... ..	316
Bedfordshire, Chalk ... ..	152, 168
" Clay ... ..	152, 170
" Coke ... ..	193
" Gravel and sand ... ..	152, 209
" Limestone ... ..	153, 249
" Sandstone ... ..	153, 264
" Persons employed ... ..	62, 65, 153
Belgium, Accidents ... ..	296, 381
" Mineral output ... ..	295, 380
" Persons employed ... ..	294, 377, 378
" Ankylostomiasis cases ... ..	381
" Coal Seams, particulars of ... ..	379
" Experiments with Safety Lamps ... ..	381
" Decline of female labour at Mines ... ..	378
Bellite, Accidents with ... ..	82
Berkshire, Chalk ... ..	152, 168
" Chert and flint ... ..	152, 169
" Clay ... ..	152, 170
" Coke ... ..	193
" Gravel and sand ... ..	152, 209
" Sandstone ... ..	153, 264
" Persons employed ... ..	62, 65, 153
Berwick, Coke ... ..	194
" Igneous rocks ... ..	154, 212
" Sandstone ... ..	155, 264
" Persons employed ... ..	66, 155
Billiton, Output of Tin ... ..	391
" Persons employed ... ..	391
Birmingham Canal Navigation's Coal and Coke traffic ... ..	185
Bismuth or Bismuth ore, Output of :	
Australia ... ..	303
Austria ... ..	369
Bolivia ... ..	382
German Empire ... ..	405
Hungary ... ..	374
New South Wales ... ..	305
Peru ... ..	439
Queensland ... ..	308
Saxony ... ..	417
Spain ... ..	454
Tasmania ... ..	311
Bituminous shale, Output of :	
France ... ..	399
Italy ... ..	427
Spain ... ..	454
Black tin ( <i>see</i> Tin ore).	
Blasting Amberite, Accidents with ... ..	100
Blasting, Fatal accidents in Quassies ... ..	26, 27, 46, 96, 98-100
Blast furnaces, Particulars of ... ..	226-231
" in operation from 1873 to 1905 ... ..	231
Blasting gelatine, Accidents with ... ..	82
Bluestone, Output of Australia ... ..	303

	Page.
Bluestone, Output of Queensland...	308
Bobbinite, Accidents with ...	75, 82
Bog ore, Output of Ireland ...	10, 20, 138, 167, 300
Bohemia, Accidents ...	373
Persons employed ...	373
Boiler explosions at Mines...	22, 23, 28, 29, 86, 87
Board of Trade inquiries ...	87, 102
Bolivia, Mineral output ...	295, 382
Bold Colliery Accident ...	80
Bonaire, Salt workings ...	394
Boracite, Output of :	
German Empire ...	405
Prussia ...	413
Turkey ...	461
Borate of calcium, Output of Bolivia ...	382
" " " Chili ...	386
Borax, Output of :	
Chili ...	385
Peru ...	439
United States ...	466
Boric acid, Output of Italy ...	427
Borneo (Dutch), Mineral output ...	391, 392
<i>(see also British North Borneo).</i>	
Bosnia and Herzegovina, Accidents ...	296, 376
" " Mineral output ...	295, 376
" " Persons employed ...	294, 375
Brazil, Mineral output ...	382, 383
Breconshire, Clay ...	154, 170
" Coal ...	154, 175, 176, 178
" Coke ...	194
" Gravel and sand ...	154, 209
" Iron ore ...	154, 215, 216
" Limestone ...	155, 249
" Sandstone ...	155, 264
" Death-rate from accidents ...	92
" Persons employed ...	57, 63, 66, 92, 155
Bridgwater Canals, Coal traffic ...	185
Briquettes, Production of :	
Hungary ...	374
United Kingdom ...	196
British Borneo, Output of Minerals ...	295, 316, 317
British Central Africa Protectorate, Minerals ...	317
British Columbia, Accidents ...	296, 297, 325
" Mineral output ...	324
" Persons employed ...	324
British East Africa Protectorate, Minerals ...	317
British Guiana, Accidents ...	296, 319
" Mineral output ...	295, 318, 319
" Persons employed ...	294, 318
British New Guinea, Mineral output ...	295, 319, 320
" " Persons employed ...	294, 319
British Solomon Islands, Copper ...	320
Broken Hill Lead Mines (New South Wales), Cases of lead poisoning ...	307
Bromine, Production of the United States ...	466
Broughton Moor Colliery Accident ...	85
Brown coal or Lignite, Output of :	
United Kingdom ...	248
Algeria ...	363
Australia ...	303
Austria ...	369
Bavaria ...	411
Bosnia and Herzegovina ...	376
Bulgaria ...	384
France ...	399
German Empire... ..	405, 407
Greece ...	420
Hungary... ..	374
Italy ...	427
New Zealand ...	349
Prussia ...	413
Roumania ...	444
Russia ...	447
Saxony ...	417
Servia ...	451
Spain ...	454
Victoria ...	313

	Page.
Brown iron ore, Output of :	
United Kingdom ... ..	218
United States ... ..	468
Buckinghamshire, Chalk ... ..	153, 168
" Clay ... ..	152, 170
" Coke ... ..	193
" Gravel and sand ... ..	152, 209
" Limestone ... ..	153, 249
" Sandstone ... ..	153, 264
" Persons employed ... ..	65, 153
Bulgaria, Accidents ... ..	296, 384
" Mineral output ... ..	295, 384
" Persons employed ... ..	294, 324
Bunker Coal, shipped coastwise ... ..	187, 188
Burnt cupreous pyrites treated at Metal Extraction Works ... ..	236
" " Metals extracted from ... ..	237
Bute, Coke ... ..	194
" Igneous rocks ... ..	154, 212
" Sandstone ... ..	155, 264
" Persons employed ... ..	66, 155
<b>C.</b>	
" CABOOK," Output of Ceylon ... ..	333
Cage Accidents, Fences for preventing ... ..	80
Caithness, Coke ... ..	194
" Gravel and Sand ... ..	154, 209
" Igneous rocks... ..	154, 212
" Sandstone ... ..	155, 264
" Slate ... ..	155, 268
" Persons employed ... ..	66, 155
Calcium carbide, Output of Ontario ... ..	327
Calc spar, Output of United Kingdom ... ..	17, 249, 250
" " Iceland ... ..	391
Caledonian Railway, Coal traffic ... ..	184
California—Accidents at Coal Mines ... ..	468
" Persons employed ... ..	465
Cambrian Collieries Explosion ... ..	76
Cambridgeshire, Chalk ... ..	152, 168
" Clay ... ..	152, 170
" Coke ... ..	193
" Gravel and sand ... ..	152, 209
" Limestone ... ..	153, 249
" Persons employed ... ..	65, 153
Cameroons, Salt springs ... ..	384
Canada, Accidents ... ..	296, 297, 325-328
" Mineral output ... ..	295, 323, 324
" Persons employed ... ..	294, 324-326, 328
" (see also British Columbia, Nova Scotia, and Ontario).	
Canal, Coal and coke traffic ... ..	185, 186
Canary Islands, Minerals worked ... ..	385
Cape Colony, Accidents ... ..	296, 330-332
" Mineral output ... ..	295, 329
" Persons employed ... ..	294, 329
Carbonite, Accidents with ... ..	82
Cardigan, Clay ... ..	154, 170
" Coke ... ..	194
" Copper ore ... ..	154, 197, 198
" Gravel and sand ... ..	154, 209
" Lead ore ... ..	155, 238, 240
" Sandstone ... ..	155, 264
" Silver ... ..	238, 240
" Slate ... ..	155, 268
" Zinc ore ... ..	155, 281, 282
" Persons employed ... ..	63, 66, 155
Carlow Co., Coke ... ..	195
" Igneous rocks ... ..	156, 212
" Limestone ... ..	157, 250
" Persons employed ... ..	67, 157
Carmarthenshire, Chert and flint ... ..	154, 169



	Page.		Page
Carmarthenshire, Clay ... ..	154, 170	China clay and stone conveyed by rail and sea ...	171
" Coal ... ..	154, 175, 176, 178	" Output of Cornwall and Devon ...	170
" Coke ... ..	194	" " Belgium ... ..	380
" Gold ... ..	155, 207	" " France ... ..	399
" Limestone ... ..	155, 249	" " Russia ... ..	447
" Sandstone ... ..	155, 264	" " Spain ... ..	454
" Slate ... ..	155, 268	Christmas Island, Phosphate of lime ...	334
" Copper smelters ... ..	204	Chrome iron, Production in United Kingdom ...	225
" Lead smelters ... ..	247	Chromic iron ore, Output of :	
" Death-rate from accidents ... ..	92	Australia... ..	303
" Persons employed ... ..	57, 63, 66, 92, 155	Bosnia and Herzegovina ... ..	376
Carnarvonshire, Clay ... ..	154, 170	Canada ... ..	323
" Coke ... ..	194	Greece ... ..	420
" Gravel and sand... ..	154, 209	New Caledonia ... ..	434
" Igneous rocks ... ..	154, 211	New South Wales ... ..	305
" Lead ore ... ..	155, 238, 240	Norway ... ..	436
" Limestone... ..	155, 249	Quebec ... ..	328
" Manganese ore ... ..	155, 251	Russia ... ..	447
" Sandstone ... ..	155, 264	Turkey ... ..	461
" Silver ... ..	238, 240	United States ... ..	466
" Slate ... ..	155, 268, 269	Clackmannan, Clay ... ..	154, 170
" Zinc ore ... ..	155, 281, 282	" Coal ... ..	154, 175, 178
" Persons employed ... ..	63, 66, 155	" Coke ... ..	194
Cavan and Leitrim Railway, Coal traffic... ..	184	" Igneous rocks ... ..	154, 212
Cavan Co., Coke ... ..	195	" Sandstone ... ..	155, 264
" Limestone ... ..	157, 250	" Persons employed ... ..	57, 63, 66, 155
" Persons employed ... ..	67, 157	Clare Co., Coke ... ..	195
Celebes, Mineral Output ... ..	392	" Gravel and sand ... ..	156, 210
Celestine ( <i>see</i> Strontium sulphate).		" Igneous rocks ... ..	156, 212
Cement, Output of :		" Sandstone... ..	157, 265
Algeria ... ..	363	" Persons employed ... ..	67, 157
Bavaria ... ..	411	Clay, Output of United Kingdom ...	10, 40, 133, 169-171, 300
Canada ... ..	324	" Production of :	
Denmark... ..	390	Algeria ... ..	363
France ... ..	399	Australia... ..	303
Ontario ... ..	327	Belgium ... ..	380
Quebec ... ..	328	France ... ..	399
Servia ... ..	451	India ... ..	341
Switzerland ... ..	459	Russia ... ..	447
Tunis ... ..	460	Spain ... ..	454
United States ... ..	466	Tunis ... ..	460
Certificates of competency, Legislation as to qualifica-		United States ... ..	466
tions ... ..	113	Victoria ... ..	313
" " List of persons to whom		" Exports from United Kingdom ...	172, 173
granted in 1905... ..	117-126	" Quarries, Fatal accidents ... ..	95, 96
Certificates of Service, do. do. ... ..	117-126	" " Persons employed ... ..	64
Ceylon, Accidents ... ..	296, 334	Cleveland iron ore, Output of ... ..	214
" Mineral output ... ..	295, 333	Coal, Output of United Kingdom ...	10, 40, 133, 173-179
" Persons employed ... ..	294, 333	295, 300	
Chalk, Output of United Kingdom ...	10, 40, 133, 168, 300	" " in each Coal-field ... ..	176, 177
" " Belgium ... ..	380	" " " County ... ..	152, 154, 156, 174, 175, 178
" " Denmark ... ..	390	" Output of :	
" " France ... ..	399	Algeria ... ..	295, 363
Chalk Quarries, Fatal accidents ... ..	95, 96	Annam ... ..	423
" " Persons employed ... ..	64	Australia ... ..	295, 302, 303
Channel Islands, Persons employed ... ..	294, 334	Austria ... ..	295, 369
" Quantity of Stone exported ... ..	334	Bavaria ... ..	411
Cheddite, Accidents with ... ..	82, 100	Belgium ... ..	295, 380
Chert and flint, Output of United Kingdom ...	10, 40, 133, 169, 300	Bosnia and Herzegovina ... ..	295, 376
Cheshire, Clay ... ..	152, 170	British Borneo ... ..	295, 316, 317
" Coal... ..	152, 174, 178	British Columbia... ..	324
" Coke ... ..	193	Bulgaria ... ..	295, 384
" Gravel and sand ... ..	152, 209	Canada ... ..	295, 323
" Limestone ... ..	153, 249	Cape Colony ... ..	295, 329
" Salt... ..	153, 261	Chili ... ..	295, 386
" Sandstone ... ..	153, 264	China ... ..	295, 388
" Coal traffic... ..	183	Corea ... ..	295, 389
" Copper smelters ... ..	204	Dutch Borneo ... ..	391
" Death-rate from accidents ... ..	93	Dutch East Indies ... ..	295, 391, 393
" Persons employed... ..	57, 62, 65, 93, 153	Formosa ... ..	295, 396
" Zinc smelters ... ..	286	France ... ..	295, 399
Cheshire Lines Railway, Salt conveyed ... ..	262	German Empire ... ..	295, 405, 407
Chili, Mineral output ... ..	295, 385, 386	Greece ... ..	295, 420
" Persons employed ... ..	294, 386	Holland ... ..	295, 422
China, Mineral wealth ... ..	295, 387, 388	Hungary ... ..	295, 374
		Illinois ... ..	465, 467

Coal, Output of— <i>cont.</i>	Page.	Cobalt and Nickel ores, Output of :— <i>cont.</i>	Page.
India ... ..	295, 341	German Empire... ..	405
Indo-China ... ..	295, 423	New Caledonia ... ..	434
Italy ... ..	295, 426	New South Wales ... ..	305
Japan ... ..	295, 429	Ontario ... ..	327
Labuan ... ..	316	Prussia ... ..	413
Mexico ... ..	295, 432	Russia ... ..	448
Natal ... ..	295, 346	Saxony ... ..	417
New South Wales ... ..	305	Spain ... ..	454
New Zealand ... ..	295, 349	Sweden ... ..	457
Nova Scotia ... ..	326	United States ... ..	466
Ohio ... ..	467	Cochin China, Output of jet and salt ... ..	423
Orange River Colony ... ..	295, 351	Coke exported from United Kingdom ... ..	179, 191-193
Pennsylvania ... ..	464, 465, 467	„ shipped coastwise ... ..	187-189, 193
Peru ... ..	295, 439	„ Output of :	
Portugal... ..	295, 442	United Kingdom ... ..	193-195
Prussia ... ..	413	Australia ... ..	303
Queensland ... ..	308	British Columbia ... ..	324
Rhodesia ... ..	295, 353	Canada ... ..	323
Roumania... ..	295, 444	New South Wales... ..	305
Russia ... ..	295, 447, 448	New Zealand ... ..	349
Sarawak ... ..	317	Nova Scotia ... ..	326
Saxony ... ..	417	Coking ovens, Number and description in United Kingdom ... ..	195, 196
Servia ... ..	295, 451	Colombia, Mineral output ... ..	295, 388, 389
Spain ... ..	295, 454	Colorado, Accidents ... ..	468, 469
Sumatra ... ..	393	„ Persons employed ... ..	465
Sweden ... ..	295, 457	„ Coal cutting machines ... ..	463
Tasmania ... ..	311	Commonwealth of Australia ( <i>see</i> Australia).	
Tong-King ... ..	423	Comparative tables, 1873-1905, Persons employed, Mineral output, Deaths from Accidents and Death-rates ... ..	38-46
Transvaal ... ..	295, 355	Congo Independent State ... ..	389
Turkey ... ..	295, 461	Copper exported ... ..	200-202
United States ... ..	295, 466	„ extracted from Burnt Cupreous pyrites ... ..	204, 237
Victoria ... ..	313	„ imported ... ..	208, 204
Western Australia ... ..	315	„ obtained from British ores ... ..	133, 197, 198
West Virginia ... ..	467	„ „ Foreign ores ... ..	204
„ Output per person employed ... 7, 14, 15, 176-178		„ Price in the London market ... ..	199, 200
„ exported from United Kingdom ... ..	179 191-193	„ Smelters in United Kingdom ... ..	204, 205
„ imported into ... ..	190	Copper or Copper ore, Output of :	
„ Average price in the several Coal-fields ... ..	177	United Kingdom ... ..	10, 40, 133, 197-199, 295, 300, 301
„ „ in the several Counties ... ..	174, 175, 178	Algeria ... ..	295, 363
„ Average price in the London market ... ..	180, 181	Argentine Republic ... ..	295, 365
„ „ at the pit's mouth 174, 175, 177, 178, 181		Australia ... ..	295, 303
„ „ at the several Ports ... ..	181	Austria ... ..	295, 369
„ Quantity retained for home consumption ... ..	179	Bolivia ... ..	295, 382
„ „ per head of population... ..	179	Bosnia and Herzegovina ... ..	295, 376
„ shipped coastwise ... ..	187-189, 193	British Columbia ... ..	324
„ „ for use of steamers ... ..	179, 193	Canada ... ..	295, 323
„ and coke conveyed by railway, canal, &c. ... ..	182-186	Cape Colony ... ..	295, 329
„ used in the blast furnaces of United Kingdom 224, 226-231		Chili ... ..	295, 386
„ „ „ manufacture of briquettes ... ..	196	Corea ... ..	295, 389
„ „ „ „ coke ... ..	193, 195	Cuba ... ..	295, 390
Coal-cutting Machines :		France ... ..	295, 399
Accidents caused by ... ..	76, 84	French Congo ... ..	401
Number in use in the United Kingdom ... ..	109	German Empire .. ..	295, 405
„ „ „ United States ... ..	463	German South-West Africa ... ..	419
Quantity of Coal obtained in United Kingdom by use of ... ..	109	Hayti ... ..	295, 421
Quantity of Coal obtained in United States by use of ... ..	463	Honduras ... ..	295, 423
Coal-dust ( <i>see</i> Accidents).		Hungary ... ..	295, 374
Coal-fields of United Kingdom, List of ... ..	54	India ... ..	295, 341
„ Fatal accidents ... ..	88-92	Italy ... ..	295, 427
„ Mineral output ... ..	176, 177	Jamaica ... ..	345
„ Persons employed ... ..	55, 56	Japan ... ..	295, 429
Coal mines, definition ... ..	53	Mexico ... ..	295, 432
„ Fatal accidents ... ..	72	Natal ... ..	295, 346
„ Mineral output from ... ..	176-178	New Caledonia ... ..	295, 434
„ Persons employed at ... ..	54-58, 177, 178	Newfoundland ... ..	295, 347
„ Regulation Act ... ..	5	New South Wales ... ..	305
„ „ „ Amendment Act, 1903 ... ..	113, 114	New Zealand ... ..	295, 349
Cobalt and Nickel ores, Output of :		Norway ... ..	295, 436
United Kingdom ... ..	41, 197	Ontario ... ..	327
Australia ... ..	303	Persia ... ..	295, 437
Bolivia ... ..	382	Peru ... ..	295, 439
Canada ... ..	323	Portugal ... ..	295, 442
Chili ... ..	386		



	Page.
Copper or Copper ore, Output of :— <i>cont.</i>	
Portuguese East Africa ... ..	443
Prussia ... ..	413
Quebec ... ..	328
Queensland ... ..	308
Russia ... ..	295, 448
Servia ... ..	295, 451
South Australia... ..	310
Spain ... ..	295, 454
Sweden ... ..	295, 457
Tasmania ... ..	311
Turkey ... ..	295, 461
United States ... ..	295, 467
Venezuela ... ..	295, 470
Victoria ... ..	313
Western Australia ... ..	315
Copper precipitate, Production of :	
United Kingdom ... ..	10, 40, 133, 197-199, 300
Bolivia ... ..	382
Portugal ... ..	442
Coprolites ( <i>see Phosphate of lime</i> ) ... ..	257
" conveyed by railway ... ..	257
Coral, Production of Ceylon ... ..	333
Corea, Mineral Output ... ..	295, 389
" Persons employed ... ..	294, 389
" Legislation ... ..	389
Cork Co., Barytes ... ..	156, 163, 165
" Briquettes... ..	196
" Clay ... ..	156, 171
" Coke ... ..	195
" Copper ore ... ..	156, 197, 198
" Gravel and sand ... ..	156, 210
" Igneous Rocks ... ..	156, 212
" Limestone ... ..	157, 250
" Slate ... ..	157, 268
" Persons employed ... ..	63, 67, 157
Cornwall, Arsenic ... ..	153, 161
" Arsenical pyrites... ..	153, 160
" Chert and flint ... ..	152, 169
" China clay and stone ... ..	171
" Clay ... ..	152, 170
" Coke ... ..	193
" Copper ore ... ..	152, 197, 198
" Gravel and sand ... ..	152, 209
" Igneous rocks ... ..	152, 211
" Iron ore ... ..	152, 215, 217
" Lead ore ... ..	153, 238, 241
" Limestone ... ..	153, 249
" Mica ... ..	153, 253
" Sandstone ... ..	153, 264
" Silver ore ... ..	153, 265
" Slate ... ..	153, 268
" Tin ore ... ..	153, 273-275
" Uranium ore ... ..	153, 279
" Wolfram ... ..	153, 280
" Zinc ore ... ..	153, 281, 282
" Arsenic refiners ... ..	162
" Death-rate from accidents ... ..	93
" Tin smelters ... ..	279
" Persons employed ... ..	59, 62, 65, 93, 153
Corundum, Output of :	
Canada ... ..	323
Ontario ... ..	327
United States ... ..	466
Costa Rica, Output of Gold ... ..	295, 389
County summaries, Output of Mines under the Coal	
Mines Act ... ..	136-139
" Output of Mines under the Metalliferous Mines Act ... ..	140-143
" Output of Quarries ... ..	144-149
" Output of Shallow workings, Brine wells, &c. ... ..	150, 151
" Output of all Mines, Quarries, &c. ... ..	152-157
" Persons employed in Coal Mines ... ..	57, 58
" " " Iron Mines ... ..	59, 60
" " " Other Mines ... ..	62, 63

	Page.
County summaries, Persons employed under the Coal	
Mines Act ... ..	137, 139
" employed under the Metalliferous Mines Act ... ..	141, 143
" employed under the Quarries Act 65-67, 145, 147, 149	
" employed under all three Acts ... ..	153, 155, 157
" Death-rates ... ..	92, 93
Coventry Canal, coal traffic ... ..	185
Crocidolite, Production of Cape Colony ... ..	329
Cruelty to Animals Act, Prosecutions under ... ..	104, 105
Cryolite, Output of Greenland ... ..	391
Cuba, Mineral output ... ..	295, 390
Cumberland, Clay ... ..	152, 170
" Coal ... ..	152, 174, 178
" Coke ... ..	193
" Gravel and sand ... ..	152, 209
" Gypsum ... ..	152, 210
" Igneous rocks ... ..	152, 211
" Iron ore ... ..	152, 215-218
" Lead ore ... ..	153, 238, 239
" Limestone ... ..	153, 249
" Sandstone ... ..	153, 264
" Silver ... ..	238, 239
" Slate ... ..	153, 268, 269
" Wolfram ... ..	153, 280
" Zinc ore ... ..	153, 281, 282
" Blast furnaces ... ..	224, 226
" Coal traffic ... ..	182, 183
" Coking ovens ... ..	195
" Death-rate from accidents ... ..	92
" Persons employed ... ..	57, 59, 62, 65, 92, 153
Cupreous iron pyrites, Output of :	
Canada ... ..	323
Italy ... ..	427
Norway ... ..	436
Portugal ... ..	442
Saxony ... ..	418
Spain ... ..	454
Cupreous iron pyrites, imported ... ..	236
" treated at the Metal Extraction Works ... ..	236
Curaçao, Minerals worked ... ..	394
Cyprus, Mineral output ... ..	295, 335

## D.

Deaths from Accidents at Mines in United Kingdom	7, 9, 23, 25, 42, 43, 67-93
" at Quarries in United Kingdom	7, 9, 27, 46, 93-102
" ( <i>see also under "Accidents"</i> ).	
Death-rates in each inspection district ... ..	34
" in the several Coal-fields ... ..	88
" in the principal Mining Counties ... ..	92, 93
" in all Mines per 1,000 persons employed	
from 1896-1905 ... ..	69
" " " 1873-1905 ... ..	70
" " " 1851-1905 ... ..	115, 116
" per million tons of mineral raised ... ..	44, 70
" Mines under the Coal Mines Act ... ..	8, 34, 44
" Metalliferous Mines Act ... ..	8, 34, 45
" of persons under and above 16 years	
of age ... ..	8, 110, 111
" Quarries under the Quarries Act ... ..	8, 34, 94, 95
" in different kinds of Quarries ... ..	95
" from accidents at Mines :	
United Kingdom 8, 34, 69-71, 115, 116, 297, 301	
Algeria ... ..	297, 364
Australia ... ..	297, 304
Austria ... ..	297, 370
Belgium ... ..	297, 381
Bohemia ... ..	373
Bosnia and Herzegovina ... ..	297, 376

	Page.		Page.
Death-rates from Accidents at Mines :—cont.		Derbyshire, Barytes ... ..	152, 163, 164
British Columbia... ..	297, 325	" Briquettes ... ..	196
British Guiana ... ..	297, 319	" Chert and flint... ..	152, 169
Cape Colony ... ..	297, 330	" Clay ... ..	152, 170
Ceylon ... ..	297, 334	" Coal ... ..	152, 174, 178
Federated Malay States ... ..	297, 337	" Coke ... ..	193
France ... ..	297, 400, 401	" Fluorspar ... ..	153, 206
German Empire ... ..	297, 408, 409	" Gravel and sand ... ..	152, 209
Gold Coast ... ..	297, 338	" Gypsum... ..	152, 210
Greece ... ..	297, 420	" Iron ore... ..	152, 215, 216
Holland ... ..	297, 422	" Iron pyrites ... ..	152, 235
Hungary ... ..	297, 375	" Lead ore ... ..	153, 238, 239, 241
India ... ..	297, 344	" Limestone ... ..	153, 249
Italy ... ..	297, 427	" Ochre ... ..	153, 253, 254
Japan ... ..	297, 430	" Sandstone ... ..	153, 264
Kimberley... ..	297, 330	" Zinc ore... ..	153, 281, 282
Mexico ... ..	297, 433	" Blast furnaces ... ..	224, 226
Natal ... ..	297, 346	" Coal traffic ... ..	182, 183
Newfoundland ... ..	297, 348	" Coking ovens ... ..	196
New South Wales ... ..	297, 304, 306	" Death-rate from accidents ... ..	92
New Zealand ... ..	297, 350	" Lead smelters ... ..	247
Norway ... ..	297, 436	" Persons employed ... ..	57, 62, 65, 92, 153
Nova Scotia ... ..	297, 326	Desilverizers in the United Kingdom ... ..	247, 248
Ontario ... ..	297, 327	Detonators, Accidents with ... ..	82, 100
Orange River Colony ... ..	297, 352	Devonshire, Arsenic... ..	153, 161
Portugal ... ..	297, 442	" Arsenical Pyrites ... ..	153, 160
Prussia ... ..	415	" Barytes ... ..	152, 163
Quebec ... ..	297, 328	" Briquettes ... ..	196
Queensland ... ..	297, 304, 309	" Chert and flint ... ..	152, 169
Russia ... ..	297, 449	" China clay ... ..	170
Saxony ... ..	418	" Clay ... ..	152, 170
Servia ... ..	297, 451	" Coke ... ..	193
South Australia ... ..	297, 304, 310	" Copper ore ... ..	152, 197, 198
Spain ... ..	297, 455	" Gravel and sand ... ..	152, 209
Sweden ... ..	297, 458	" Igneous rocks ... ..	152, 211
Switzerland ... ..	297, 459	" Limestone ... ..	153, 249
Tasmania ... ..	297, 304, 312	" Manganese ore ... ..	153, 261
Transvaal ... ..	297, 356	" Ochre ... ..	153, 253, 254
Trinidad ... ..	297, 360	" Pottery clay ... ..	170
United States ... ..	297, 468, 469	" Sandstone ... ..	153, 264
Victoria ... ..	297, 304, 313	" Slate ... ..	153, 268
Western Australia ... ..	297, 304, 315	" Tin ore ... ..	153, 273, 274
Death-rates from accidents at Petroleum Wells :		" Arsenic refiners ... ..	162
Austria ... ..	370	" Persons employed ... ..	59, 62, 65, 153
" from accidents at Quarries :		Diagram, Annual Death-rates from various causes of	
United Kingdom... 8, 34, 46, 94, 95, 297, 301		Accidents per 1,000 persons employed at	
Algeria ... ..	297, 364	Mines, 1873-1905 ... ..	68
Belgium ... ..	297, 381	Diagram, Deaths per 1,000,000 tons of mineral raised,	
France ... ..	297, 400	1873-1905 ... ..	70
German Empire ... ..	297, 410	" Death-rates from Accidents per 1,000 persons	
India ... ..	344	employed underground and aboveground at	
Italy ... ..	297, 428	all Mines, 1873-1905 ... ..	70
Newfoundland ... ..	297, 348	" Death-rates from Accidents underground,	
Russia ... ..	297, 449	1873-1905 ... ..	71
Switzerland ... ..	297, 459	" Death-rates from Accidents from explosions	
Trinidad ... ..	297, 360	of firedamp, 1873-1905 ... ..	75
Denmark, Mineral output ... ..	390	" Death-rates from Accidents from falls of	
Denbighshire, Chert and flint ... ..	154, 169	ground, 1873-1905 ... ..	78
" Clay ... ..	154, 170	" Death-rates from Shaft Accidents, 1873-1905	
" Coal ... ..	154, 175, 178	" Death-rates from Miscellaneous underground	
" Coke ... ..	194	Accidents, 1873-1905 ... ..	81
" Gravel and sand ... ..	154, 209	" Death-rates from Accidents on surface,	
" Igneous rocks ... ..	154, 211	1873-1905 ... ..	86
" Iron ore ... ..	154, 215, 216	" Death-rates of Men and Boys employed at	
" Lead ore ... ..	155, 238, 240	Mines ... ..	110
" Limestone ... ..	155, 249	" Death-rates from Accidents at Quarries and at	
" Sandstone ... ..	155, 264	Mines, 1896-1905 ... ..	94
" Silver ... ..	238, 240	" Number of Persons employed and Number of	
" Slate ... ..	155, 268, 269	Deaths from Accidents from all causes at	
" Zinc ore ... ..	155, 281, 282	Mines, 1851-1905 ... ..	68
" Blast furnaces ... ..	224, 230	" Output and Export of Coal, 1873-1905 ... ..	173
" Coal traffic ... ..	185	" Output and Import of Iron ore, 1873-1905 ... ..	214
" Coking ovens ... ..	196	" Proportion of deaths from different classes	
" Death-rate from accidents ... ..	92	of Accidents, 1905 ... ..	73
" Persons employed ... ..	57, 63, 66, 92, 155	" Prices of Coal and Iron, 1873-1905 ... ..	267
" Zinc smelters ... ..	286	" Prices of Copper, Lead, Tin, and Zinc, 1873-	
		1905 ... ..	287



	Page.
Diamonds, Output of	
Australia...	303
Borneo, Dutch ...	392
Brazil ...	383
British Guiana ...	318
Cape Colony ...	329
India ...	341
Orange River Colony ...	351
New South Wales ...	305
Transvaal ...	355
District statistics of persons employed, Output and accidents ...	11-35
Districts, Mines inspection, List of ...	47, 48
Dominica Sulphur mine ...	335
Donegal Co., Bog ore ...	150
" Igneous rocks ...	156, 212
" Lead ore ...	157, 238, 241
" Limestone ...	157, 250
" Sandstone ...	157, 265
" Persons employed ...	63, 67, 157
Dorsetshire, Chalk ...	152, 168
" Chert and flint ...	152, 169
" Clay ...	152, 170
" Coke ...	193
" Gravel and sand ...	152, 209
" Limestone ...	153, 249
" Potters' clay ...	170
" Persons employed ...	62, 65, 153
Down Co., Coke ...	195
" Igneous rocks ...	156, 212
" Limestone ...	157, 250
" Sandstone ...	157, 265
" Persons employed ...	63, 67, 157
Dublin Co., Clay ...	156, 171
" Coke ...	195
" Gravel and sand ...	156, 210
" Igneous rocks ...	156, 212
" Limestone ...	157, 250
" Sandstone ...	157, 265
" Persons employed ...	67, 157
Dumbarton, Clay ...	154, 170
" Coal ...	154, 175, 178
" Coke ...	194
" Gravel and sand ...	154, 209
" Igneous rocks ...	154, 212
" Iron ore ...	154, 215, 216
" Limestone ...	155, 250
" Petroleum ...	155, 256
" Sandstone ...	155, 264
" Slate ...	155, 268
" Coal traffic ...	184, 186
" Coking ovens ...	196
" Death-rate from Accidents... ..	93
" Persons employed ...	57, 63, 66, 93, 155
Dumfries, Clay ...	154, 170
" Coal ...	154, 175, 178
" Coke ...	194
" Igneous rocks ...	154, 212
" Lead ore ...	155, 238, 241
" Limestone ...	155, 250
" Sandstone ...	155, 265
" Silver ...	238, 240
" Zinc ore ...	155, 281, 283
" Coal traffic ...	184
" Persons employed ...	57, 63, 66, 155
Durham, Barytes ...	152, 163, 164
" Clay ...	152, 170
" Coal ...	152, 174, 178
" Coke ...	193
" Fluorspar ...	153, 206
" Gravel and sand ...	152, 209
" Igneous rocks ...	152, 211
" Iron ore ...	152, 215, 217, 218, 220
" Lead ore ...	153, 238, 239
" Limestone ...	153, 249

	Page.
Durham, Salt...	153, 261
" Sandstone ...	153, 264
" Silver ...	238, 239
" Blast furnaces ...	224, 226
" Coal traffic ...	183
" Coking ovens ...	195
" Copper smelters ...	205
" Death-rate from Accidents ...	92
" Lead smelters ...	247
" Persons employed ...	57, 59, 62, 65, 92, 153
Dust in Ganister Mines ...	112
Dutch East Indies, Mineral output ...	295, 391-393
" " " Persons employed ...	294, 391-393
" Guiana, Output of Gold ...	295, 393
" West Indies, Mineral output ...	295, 394

## E.

EAST INCE HALL COLLIERY ACCIDENT ...	85
Ecuador, Output of Gold and Silver ...	394
Edinburghshire, Clay ...	154, 170
" Coal ...	154, 175, 178
" Coke ...	194
" Gravel and sand... ..	154, 209
" Igneous rocks ...	154, 212
" Iron ore ...	154, 215, 216
" Limestone ...	155, 250
" Oil shale ...	155, 255
" Sandstone ...	155, 265
" Coal traffic ...	184
" Death-rate from accidents ...	92
" Persons employed ...	57, 63, 66, 92, 155
Egypt, Mineral wealth ...	395, 396
Elba Colliery Explosion ...	76
Electric fuse, Accidents with ...	83, 99
Electricity, Accidents caused by ...	76, 84, 85, 88
Electronite, Accidents with ...	82
Elgin, Clay ...	154, 170
" Coke ...	194
" Gravel and sand ...	154, 209
" Igneous rocks ...	154, 212
" Sandstone ...	155, 265
" Persons employed ...	66, 155
Emeralds, Output of Colombia ...	388
Emery, Output of:	
Bavaria ...	411
Greece ...	420
Turkey ...	461
United States ...	466
Employment of boys at Mines ...	110-112
Employment of females at Mines... ..	55
Employment of Children Act, 1903 ...	54
England, Summary of mineral output ...	134
Eritrea, Gold Mines and Salt Workings ...	396
Essex, Briquettes ...	196
" Chalk ...	152, 168
" Chert and flint ...	152, 169
" Clay ...	152, 170
" Coke ...	193
" Gravel and sand ...	152, 209
" Persons employed ...	65, 153
Examinations for Managers' Certificates, List of Secretaries to Boards ...	47, 48
Explosions of fire-damp or coal-dust in the Mines of the United Kingdom, Accidents from 22, 23, 28-34, 35, 42, 43, 73-77	
" Accidents from, classified according to kind of Mine and cause ...	74, 75
" of fire-damp or coal-dust in the Mines of:	
Austria ...	373
Prussia ...	416, 417
(See also under "Accidents.")	





	Page.		Page
Ganister ( <i>see</i> Sandstone) ... ..	264, 265	Gold or Gold quartz, Output of— <i>cont.</i>	
Ganister Mines, Special Rules ... ..	112	Austria ... ..	295, 369
Garnet, Output of German East Africa ... ..	402	Bolivia ... ..	295, 382
" " Spain ... ..	454	Brazil ... ..	295, 383
" " United States ... ..	466	British Borneo ... ..	295, 317
Gas, Carburetted hydrogen, Output of Italy ... ..	427	British Columbia ... ..	324
Gelatine-dynamite, Accidents with ... ..	82, 100	British Guiana ... ..	295, 318, 319
Gelignite, Accidents with ... ..	82, 100	British New Guinea ... ..	295, 320
Geloxite, Accidents with ... ..	82	Canada ... ..	295, 323
General remarks :		Cape Colony ... ..	295, 329
Ambulance work ... ..	112	Celebes ... ..	392
Ankylostomiasis ... ..	113	Chili ... ..	295, 386
Coal-cutting machinery ... ..	109	China ... ..	295, 388
Coal Mines Regulation Act (1887) Amendment Act 1903 ... ..	113	Colombia... ..	295, 389
Dust in Ganister Mines ... ..	112	Congo Independent State ... ..	295, 389
Employment of boys at mines ... ..	110-112	Corea ... ..	295, 389
Explosives in Coal Mines Order ... ..	107	Costa Rica ... ..	295, 389
Explosives used in 1905 ... ..	108	Dutch Borneo ... ..	392
Safety Lamps ... ..	113	Dutch East Indies ... ..	295, 392, 393
General Summary of the Mineral Output of :		Dutch Guiana ... ..	295, 393
United Kingdom for 1904 and 1905 ... ..	10, 133, 300, 301	Dutch West Indies ... ..	295, 394
British Empire " " ... ..	295	Ecuador ... ..	295, 394
Foreign countries " " ... ..	295	Federated Malay States ... ..	295, 336, 337
Georgia, Persons employed at Coal Mines ... ..	465	Formosa ... ..	295, 396
" Coal Cutting Machines ... ..	463	France ... ..	295, 399
German East Africa, Mineral deposits ... ..	402	French Guiana ... ..	295, 401
" South-West Africa, Minerals found in ... ..	419	German East Africa ... ..	295, 402
" Empire, Accidents... ..	296, 408-410	German Empire... ..	295, 406, 408
" " Mineral output ... ..	295, 405-408	Gold Coast ... ..	295, 338
" " Persons employed ... ..	294, 404, 405	Honduras ... ..	295, 423
Gerrard, John, Remarks on rope "cappings" ... ..	80	Hungary... ..	295, 374
Glamorganshire, Briquettes ... ..	196	India ... ..	295, 341
" Clay ... ..	154, 170	Indo-China ... ..	295, 423
" Coal ... ..	154, 175, 176, 178	Italy ... ..	295, 427
" Coke ... ..	194	Ivory Coast ... ..	402
" Iron ore ... ..	154, 215, 216	Japan ... ..	295, 429
" Limestone ... ..	155, 249	Madagascar ... ..	295, 431
" Sandstone ... ..	155, 264	Mexico ... ..	295, 432
" Arsenic refiners ... ..	162	Natal ... ..	295, 346
" Blast furnaces ... ..	224, 230	Newfoundland ... ..	295, 347
" Coal traffic ... ..	183	New South Wales ... ..	305
" Coking-ovens ... ..	196	New Zealand ... ..	295, 349
" Copper smelters ... ..	205	Nicaragua ... ..	295, 435
" Death-rate from Accidents ... ..	93	Norway ... ..	295, 436
" Lead smelters ... ..	247	Nova Scotia ... ..	326
" Persons employed ... ..	57, 63, 66, 93, 155	Ontario ... ..	327
" Tin smelters ... ..	279	Panama ... ..	295, 437
" Zinc smelters ... ..	286	Peru ... ..	295, 439
Glasgow and South Western Railway, Coal carried ... ..	184	Porto Rico ... ..	295, 440
Gloucestershire, Briquettes ... ..	196	Portugal ... ..	295, 442
" Clay ... ..	152, 170	Portuguese East Africa ... ..	443
" Coal ... ..	152, 174, 178	Prussia ... ..	413
" Coke ... ..	193	Quebec ... ..	328
" Gravel and sand ... ..	152, 209	Queensland ... ..	308
" Iron ore ... ..	152, 215, 217, 218	Rhodesia ... ..	295, 353
" Limestone ... ..	153, 249	Russia ... ..	295, 443
" Ochre ... ..	153, 253, 254	Sarawak ... ..	317
" Sandstone ... ..	153, 264	Senegal ... ..	295, 402
" Strontium sulphate ... ..	153, 272	Servia ... ..	295, 451
" Coal traffic ... ..	182, 183	Siam ... ..	295, 452
" Coking ovens ... ..	196	South Australia... ..	310
" Death-rate from Accidents ... ..	92	Sumatra ... ..	393
" Lead smelters ... ..	247	Sweden ... ..	295, 457
" Persons employed ... ..	57, 59, 62, 65, 92, 153	Tasmania ... ..	312
" Zinc smelters ... ..	286	Transvaal ... ..	295, 354, 355
Gold bullion and specie exported and imported ... ..	208	Turkey ... ..	295, 462
" extracted from foreign cupreous pyrites ... ..	208, 237	United States ... ..	295, 467
" ore, Imported ... ..	208	Uruguay ... ..	295, 469
Gold or Gold quartz, Output of :		Venezuela ... ..	295, 470
United Kingdom ... ..	10, 40, 133, 207, 208, 295, 300, 301	Victoria ... ..	313
Abyssinia ... ..	295, 362	Western Australia ... ..	315
Annam ... ..	423	Gold Coast, Accidents ... ..	296, 338
Argentine Republic ... ..	295, 365	" Quantity of Gold exported ... ..	295, 338
Aruba ... ..	394	" Persons employed ... ..	294, 338
Australia ... ..	295, 302, 303	" Legislation ... ..	338

Grand Canal, Coal traffic ...	Page.
Granite, Output of:	
United Kingdom (included with Igneous rocks)	211, 212
Australia ...	303
Bavaria ...	411
British Guiana ...	318
Canada ...	323
Ceylon ...	333
Newfoundland ...	347
Norway ...	435
Quebec ...	328
Queensland ...	308
Graphite, Output of:	
Australia...	303
Austria ...	369
Bavaria ...	411
Canada ...	323
Ceylon ...	333
France ...	399
German Empire...	405
India ...	341
Italy ...	427
Japan ...	429
Mexico ...	432
Natal ...	346
Ontario ...	327
Quebec ...	328
Spain ...	454
Sweden ...	457
United States ...	466
Western Australia ...	315
Gravel and sand, Output of:	
United Kingdom ...	10, 40, 133, 209, 210, 300
Algeria ...	363
Belgium ...	380
Canada ...	323
Ceylon ...	333
France ...	400
Newfoundland ...	347
Tunis ...	460
Great Central Railway, Coal and Coke carried ...	182
Great Northern Railway, Coal carried ...	183
" " " Salt conveyed...	263
Great Southern and Western Railway, Coal traffic ...	184
Great Western Railway, Coal and Coke carried...	182
Greece, Accidents ...	296, 420
" Mineral output ...	295, 420
" Persons employed ...	294, 419
Greenland, Output of Cryolite ...	391
" Persons employed ...	294, 391
Grindstones, Output of:	
Canada ...	323
Nova Scotia ...	326
United States ...	466
Guano, Output of Chili ...	386
Guatemala, Mineral deposits ...	421
Gum, Kauri, Production of New Zealand ...	349
Gunpowder, Accidents with ...	82, 100
Gypsum, Output of:	
United Kingdom ...	10, 40, 133, 210, 211, 300
Algeria ...	363
Australia...	303
Bavaria ...	411
Canada ...	323
Cyprus ...	335
France ...	399
Greece ...	420
India ...	341
Nova Scotia ...	326
Ontario ...	327
Switzerland ...	459
United States ...	466
Victoria ...	313

## H.

	Page.
HADDINGTON, Clay ...	154, 170
" Coal ...	154, 175, 178
" Coke ...	194
" Gravel and sand ...	154, 209
" Igneous rocks ...	154, 212
" Limestone ...	155, 250
" Sandstone ...	155, 265
" Persons employed ...	57, 66, 155
Hampshire, Briquettes ...	196
" Chalk ...	152, 168
" Chert and flint ...	152, 169
" Clay ...	152, 170
" Coke ...	193
" Gravel and sand ...	152, 209
" Sandstone ...	153, 264
" Persons employed ...	65, 153
Haulage, Underground Accidents...	22-25, 28-31, 35, 81, 84
" Remarks by Inspectors ...	84
Haylite, Accidents with ...	83
Hayti, Mineral deposits ...	421
Hematite iron, Production of the blast furnaces ...	235
Herefordshire, Clay ...	152, 170
" Coke ...	193
" Gravel and sand ...	152, 209
" Igneous rocks ...	152, 211
" Limestone ...	153, 249
" Sandstone ...	153, 264
" Persons employed ...	65, 153
Hertfordshire, Chalk ...	152, 168
" Chert and flint ...	152, 169
" Clay ...	152, 170
" Coke ...	193
" Gravel and sand ...	152, 209
" Persons employed ...	62, 65, 153
Holland, Accidents ...	296, 423
" Mineral output ...	295, 423
" Persons employed ...	294, 421, 423
Holytown, No. 18 Pit, Accident ...	84
Honduras, Mineral output ...	295, 423
Honestones, Production of Belgium ...	380
Hull and Barnsley Railway, Coal and coke carried ...	182
Hungary, Accidents ...	296, 375
" Mineral output ...	295, 374
" Persons employed ...	294, 374
Huntingdonshire, Clay ...	152, 170
" Coke ...	193
" Gravel and sand ...	152, 209
" Persons employed ...	65, 153

## I.

ICELAND, Mineral deposits and output ...	391
Idaho, Persons employed at Coal Mines ...	465
Igneous rocks, Output of United Kingdom ...	10, 40, 133, 211, 212, 300
" Quarries, Accidents ...	95, 96
" Persons employed ...	64
Illinois, Accidents in Coal Mines ...	468
" Output of Coal ...	465, 467
" Persons employed ...	465
" Coal-cutting machines ...	463
Imports of Coal ...	190
" Copper and copper ore ...	203, 204
" Gold and gold ore ...	208
" Iron ore ...	221-223
" Iron pyrites ...	236
" Lead and lead ore ...	245, 246



	Page.
Imports of Manganese ore ... ..	252
" Petroleum ... ..	257
" Phosphate of lime ... ..	258
" Quicksilver ... ..	259
" Silver bullion and specie ... ..	266
" Silver ore ... ..	266
" Tin and tin ore ... ..	277
" Zinc and zinc ore ... ..	284
Inclined and engine planes, Accidents 26, 27, 32, 33, 97, 101, 102	
India, Fatal Accidents ... ..	296, 343, 344
" Mineral output ... ..	295, 341-343
" Persons employed ... ..	294, 340, 341
" Rules for Mine Managers' Certificates ... ..	344, 345
Indo-China, Mineral output ... ..	295, 423, 424
Indiana, Accidents in Coal Mines... ..	468
" Persons employed ... ..	465
" Coal-cutting machines ... ..	463
Indian Territory, Accidents in Coal Mines ... ..	468
" Persons employed ... ..	465
" Coal-cutting machines ... ..	463
Infusorial earth, Output of Australia ... ..	303
" " Sweden ... ..	457
" " United States ... ..	466
" " Victoria ... ..	313
Inspection districts for Mines and Quarries ... ..	47, 48
Inspectors of Mines, List of ... ..	47, 48
Institutions approved for Mining Degrees ... ..	113, 114
Inverness, Coke ... ..	194
" Gravel and sand... ..	154, 209
" Igneous Rocks ... ..	154, 212
" Limestone ... ..	155, 250
" Sandstone ... ..	155, 265
" Persons employed ... ..	66, 155
Iodine, Production of Chili ... ..	386
" " Java (Dutch East Indies) ... ..	392
Iowa, Accidents in Coal Mines ... ..	468
" Persons employed ... ..	465
" Coal-cutting machines ... ..	463
Ireland, Summary of Mineral output ... ..	135
(See also under each County.)	
" Lead smelters ... ..	248
Irish Coal-fields, Counties ... ..	54
" Fatal accidents ... ..	88-92
" Output of Mineral ... ..	176, 177
" Persons employed ... ..	55, 56, 177
Iron or Iron ore, Output of :	
United Kingdom 10, 41, 133, 213-220, 223, 295, 300, 301	
Alabama ... ..	468
Algeria... ..	295, 363
Australia ... ..	295, 303
Austria... ..	295, 369
Bavaria ... ..	411
Belgium ... ..	295, 380
Bosnia and Herzegovina ... ..	295, 376
Canada... ..	295, 323
China ... ..	295, 388
Corea ... ..	295, 389
Cuba ... ..	295, 390
France ... ..	295, 399
German Empire ... ..	295, 405, 408
Greece ... ..	295, 420
Hungary ... ..	295, 374
India ... ..	295, 341
Italy ... ..	295, 427
Japan ... ..	295, 429
Luxemburg ... ..	295, 406
Mexico... ..	295, 432
Michigan ... ..	468
Minnesota ... ..	468
Newfoundland ... ..	295, 347
New South Wales ... ..	305
New Zealand ... ..	295, 349
Norway ... ..	295, 436
Nova Scotia ... ..	326

	Page
Iron or Iron ore, Output of—cont.	
Ontario ... ..	327
Portugal ... ..	295, 442
Prussia ... ..	413
Quebec... ..	328
Queensland ... ..	308
Russia ... ..	295, 448
Saxony ... ..	418
South Australia ... ..	310
Spain ... ..	454
Sweden ... ..	295, 457
Tasmania ... ..	311, 312
United States... ..	295, 467, 468
Western Australia ... ..	315
Iron ore, Exported ... ..	222, 223
" Imported ... ..	221-223
" Diagram showing output and import, 1873-1905 ... ..	214
" Fatal Accidents at Iron Mines ... ..	72
" Output from Coal Mines ... ..	214, 215
" " Mines under the Coal Mines Act 10, 15, 216	
" " " Metalliferous Mines Act 10, 17, 217-219	
" " " Iron Mines ... ..	214, 215
" " " Quarries ... ..	19, 213-215, 220
" " Open workings ... ..	21, 220
" " in each County... ..	152, 154, 156, 215
" " from the several Coal-fields ... ..	176
" Persons employed at Iron Mines ... ..	54, 58-60
" Quantity available for the blast furnaces ... ..	223
" " smelted in United Kingdom 224, 226-231	
" Quarries, Accidents ... ..	95, 96
" " Persons employed ... ..	64
" Micaceous... ..	254
Iron oxide, Production of Australia ... ..	303
" " New South Wales ... ..	305
Iron, Pig, Exported ... ..	232-234
" Prices per ton in different districts ... ..	232, 233
" Output of the blast furnaces ... ..	224-232
" Quantity available for home consumption ... ..	232
" " obtainable from British ores 133, 213	
Iron pyrites, Imported ... ..	236
" Countries whence exported ... ..	236
" Output of :	
United Kingdom ... ..	10, 41, 133, 235, 300
Bavaria ... ..	411
Belgium ... ..	380
Bosnia and Herzegovina ... ..	376
Canada ... ..	323
France ... ..	399
German Empire ... ..	405
Hungary ... ..	374
Italy ... ..	427
Japan ... ..	429
Newfoundland ... ..	347
Norway ... ..	436
Ontario ... ..	327
Portugal ... ..	442
Prussia ... ..	413
Russia ... ..	448
Saxony ... ..	418
Spain ... ..	454
Sweden ... ..	457
Turkey ... ..	462
United States ... ..	466
Iron vitriol, Production of :	
Austria ... ..	369
German Empire ... ..	406
Hungary ... ..	374
Japan ... ..	429
Prussia ... ..	413
Irruptions of water, Accidents ... ..	22, 23, 81, 84
Isle of Man, Clay ... ..	156, 171
" Coke ... ..	195
" Fuller's earth ... ..	171
" Gravel and sand ... ..	156, 210

	Page.
Isle of Man, Igneous rocks ... ..	156, 212
" Lead ore ... ..	157, 238, 241
" Limestone ... ..	157, 250
" Salt ... ..	157, 261
" Sandstone ... ..	157, 265
" Silver ... ..	238, 241
" Slate ... ..	157, 268
" Zinc ore ... ..	157, 281, 283
" Summary of the Mineral output ... ..	135
" Persons employed ... ..	60, 63, 67, 157
Isle of Wight ( <i>included with Hampshire</i> ).	
Italy, Accidents ... ..	296, 427, 428
" Mineral output ... ..	295, 427
" Persons employed ... ..	294, 425, 426
Ivory Coast, Mineral Output ... ..	402
" Persons employed ... ..	402

## J.

JADESTONE, Output of India ... ..	341
Jamaica, Copper exports ... ..	345
Japan, Accidents ... ..	296, 430
" Mineral output ... ..	295, 429
" Persons employed ... ..	294, 429
Java, Mineral output ... ..	392
Jet, Output of :	
United Kingdom ... ..	237
Cochin China ... ..	423
Johore, Mineral deposits ... ..	430

## K.

KAINITE, Output of :	
German Empire... ..	405
Prussia ... ..	413
Kansas, Accidents at Coal Mines ... ..	468
" Persons employed ... ..	465
" Coal-cutting machines ... ..	463
Kauri gum, Production of New Zealand ... ..	349
Kent, Chalk ... ..	152, 168
" Chert and flint ... ..	152, 169
" Clay ... ..	152, 170
" Coke ... ..	194
" Gravel and sand ... ..	152, 209
" Limestone ... ..	153, 249
" Sandstone ... ..	153, 264
" Coking ovens ... ..	195
" Persons employed ... ..	57, 62, 65, 153
Kentucky, Accidents at Coal Mines ... ..	468
" Persons employed ... ..	465
" Coal-cutting machines ... ..	463
Kerry Co., Coke ... ..	195
" Gravel and sand ... ..	156, 210
" Igneous rocks ... ..	156, 212
" Limestone ... ..	157, 250
" Persons employed ... ..	67, 157
Kildare Co., Gravel and sand ... ..	156, 210
" Limestone ... ..	157, 250
" Persons employed ... ..	67, 157
Kilkenny Co., Coal ... ..	156, 175, 176, 178
" Coke ... ..	195
" Limestone ... ..	157, 250
" Slate ... ..	157, 268
" Coal traffic ... ..	184, 186
" Persons employed ... ..	58, 67, 157
Kimberley Diamond Mines, Accidents at ... ..	330-332
" Persons employed at ... ..	329, 330

	Page.
Kincardine, Coke ... ..	194
" Gravel and sand ... ..	154, 209
" Igneous rocks ... ..	154, 212
" Sandstone ... ..	155, 265
" Persons employed ... ..	66, 155
King's County, Bog ore ... ..	150
" Coke... ..	195
" Gravel and sand ... ..	156, 210
" Limestone ... ..	157, 250
" Sandstone ... ..	157, 265
" Persons employed ... ..	67, 157
Kinross, Clay ... ..	154, 170
" Coal... ..	154, 175, 178
" Coke ... ..	194
" Igneous rocks ... ..	154, 212
" Persons employed ... ..	57, 66, 155
Kirkcudbright, Coke ... ..	194
" Igneous rocks ... ..	154, 212
" Persons employed ... ..	66, 155
Kynite, Accidents with ... ..	82

## L.

LABUAN, Output of coal ... ..	316
Lanarkshire, Briquettes ... ..	196
" Clay ... ..	154, 170
" Coal ... ..	154, 175, 178
" Coke ... ..	194
" Gravel and sand ... ..	154, 209
" Igneous rocks ... ..	155, 212
" Iron ore ... ..	154, 215, 216
" Lead ore ... ..	155, 238, 241
" Limestone ... ..	155, 250
" Oil shale ... ..	155, 255
" Sandstone ... ..	155, 265
" Silver ... ..	238, 241
" Blast furnaces ... ..	224, 231
" Coal traffic ... ..	184, 186
" Coking ovens ... ..	196
" Death-rate from accidents... ..	92
" Persons employed ... ..	57, 63, 66, 92, 155
" Zinc smelters ... ..	286
Lancashire, Alum Shale ... ..	153, 158
" Briquettes ... ..	196
" Clay ... ..	152, 170
" Coal ... ..	152, 174, 178
" Coke ... ..	194
" Copper ore ... ..	152, 197, 198
" Gravel and sand ... ..	152, 209
" Igneous rocks ... ..	152, 211
" Iron ore ... ..	152, 215, 217, 219
" Iron pyrites ... ..	152, 235
" Limestone ... ..	153, 249
" Salt ... ..	153, 261
" Sandstone ... ..	153, 264
" Slate ... ..	153, 268, 269
" Blast furnaces ... ..	224, 227
" Coal traffic ... ..	182, 183, 185
" Coking ovens ... ..	195
" Copper smelters ... ..	205
" Death-rate from accidents ... ..	92
" Lead smelters ... ..	247
" Persons employed ... ..	57, 59, 62, 65, 92, 153
" Zinc smelters ... ..	286
Lancashire and Cheshire Coal-fields, Counties ... ..	54
" " " Fatal Accidents ... ..	88-92
" " " Output of Mineral ... ..	176, 177
" " " Persons employed ... ..	55, 56, 177
Lancashire and Yorkshire Railway, Coal and Coke carried ... ..	182



	Page.		Page.
Lead obtainable from British ores ...	133, 238-241	Lignite ( <i>see</i> Brown coal).	
" " imported foreign ores ...	246	Limerick Co., Coke ...	195
" Prices of, in the London market ...	242, 243	" Gravel and sand ...	156, 210
" Quantity available for home consumption ...	246	" Igneous rocks ...	156, 212
" Smelters in United Kingdom ...	247, 248	" Limestone ...	157, 250
" and lead ore, Exported ...	243-246	" Sandstone ...	157, 265
" and lead ore, Imported ...	245, 246	" Persons employed ...	67, 157
Lead and lead ore, Output of :		Lime or limestone :	
United Kingdom ...	10, 41, 133, 238-242, 295, 300, 301	Output of United Kingdom ...	10, 41, 133, 249, 250, 300
Algeria ...	295, 368	Algeria ...	363
Australia ...	295, 303	Australia ...	303
Austria ...	295, 369	Bavaria ...	411
Belgium ...	295, 380	Belgium ...	380
British Columbia ...	324	Canada ...	323
Canada ...	295, 323	Cuba ...	390
China ...	295, 388	France ...	399
France ...	295, 399	Japan ...	391
German Empire ...	295, 405	Malta ...	345
Greece ...	295, 420	Natal ...	346
Honduras ...	295, 423	New South Wales ...	306
Hungary ...	295, 374	Nova Scotia ...	326
Italy ...	295, 427	Ontario ...	327
Japan ...	295, 429	Queensland ...	308
Mexico ...	295, 432	Saxony ...	418
New South Wales ...	305	South Australia ...	310
Norway ...	436	Switzerland ...	459
Ontario ...	327	Trinidad ...	359
Peru ...	295, 439	Tunis ...	460
Portugal ...	295, 442	United States ...	466
Prussia ...	413	Western Australia ...	315
Queensland ...	308	Limestone Quarries, Accidents ...	95, 96
Rhodesia ...	295, 353	" " Persons employed ...	64
Russia ...	295, 448	Lincolnshire, Chalk ...	152, 168
Servia ...	295, 451	" Clay ...	152, 170
Siam ...	295, 452	" Coke ...	194
South Australia ...	310	" Gravel and sand ...	152, 209
Spain ...	295, 455	" Iron ore ...	152, 215, 216, 220
Sweden ...	295, 457	" Limestone ...	153, 249
Tasmania ...	295, 312	" Blast furnaces ...	224, 227
Tunis ...	295, 460	" Persons employed ...	59, 65, 153
Turkey ...	295, 462	Linlithgowshire, Clay ...	154, 170
United States ...	295, 467	" Coal ...	154, 175, 178
Lead poisoning cases at Broken Hill Mines (New South Wales) ...	307	" Coke ...	194
Leeds and Liverpool Canal Co. Coal traffic ...	185	" Gravel and sand ...	154, 209
Leeward Islands ( <i>see</i> Redonda).		" Igneous rocks ...	154, 212
Legislation relating to Mines in :		" Iron ore ...	154, 215, 216
Corea ...	389	" Oil shale ...	155, 255
France ...	401	" Sandstone ...	155, 265
British Central Africa Protectorate ...	317	" Coal traffic ...	184
Gold Coast ...	338	" Coking ovens ...	196
Madagascar ...	431	" Death-rate from Accidents ...	93
Mexico ...	433	" Persons employed ...	57, 63, 66, 93, 155
New South Wales ...	307	Lithium, Output of United States ...	466
Portuguese East Africa ...	443	Lithographic stone, Output of :	
Tasmania ...	312	Bavaria ...	411
Transvaal ...	357	France ...	399
Venezuela ...	470	Llanhilleth Colliery Accident ...	85
Western Australia ...	315	Lletty Shenkin Colliery Accident ...	88
Leicestershire, Clay ...	152, 170	London and North Western Railway, Coal carried ...	183
" Coal ...	152, 174, 178	" " " Salt conveyed ...	262
" Coke ...	194	London Co., Lead smelters ...	247
" Gravel and sand ...	152, 209	Londonderry Co., Coke ...	195
" Igneous rocks ...	152, 211	" Igneous rocks ...	156, 212
" Iron ore ...	152, 215, 220	" Iron ore ...	156, 215, 217, 219
" Limestone ...	153, 249	" Limestone ...	157, 250
" Slate ...	153, 268	" Sandstone ...	157, 265
" Blast furnaces ...	224, 227	" Persons employed ...	60, 67, 157
" Coal traffic ...	183	Longford Co., Gravel and sand ...	156, 210
" Death-rate from Accidents ...	92	" Limestone ...	157, 250
" Persons employed ...	57, 62, 65, 92, 153	" Persons employed ...	67, 157
Leitrim Co., Coal ...	156, 175, 178	Louth Co., Coke ...	195
" Sandstone ...	157, 265	" Gravel and sand ...	156, 210
" Coal traffic ...	184	" Igneous rocks ...	156, 212
" Persons employed ...	58, 67, 157	" Limestone ...	157, 250
Liberia, Mineral wealth ...	430	" Persons employed ...	67, 157
		Luxemburg (G. Duchy), Output of iron ore ...	295, 406
		" Persons employed ...	294, 404

## M.

	Page.
MACHINERY, Accidents by, at Mines 22-25, 28-31, 81, 84,	86
" " Quarries ... 26, 27, 32, 33, 101,	102
" Coal mined in the United States by ...	463
Madagascar, Mineral wealth and export of gold	295, 431
" Persons employed ...	294, 431
" Legislation ...	431
Magnetite, Production of :	
Greece ...	420
India ...	341
United States ...	466
Magnesium carbonate, Output of Spain ...	455
" chloride, Production of :	
German Empire ...	406
Prussia ...	414
" salts, Production of :	
German Empire ...	405, 406
Prussia ...	413
" sulphate, Production of :	
German Empire ...	406
Prussia ...	414
Malay States ( <i>see</i> Federated Malay States).	
Malta, Mineral deposits ...	345
Managers' Certificates, List of persons to whom granted in 1905 ...	117-126
Manchester Ship Canal Co., Coal conveyed ...	185
" " " " Salt conveyed ...	262
Manganese ore, Imported ...	252
" " Output of :	
United Kingdom ...	10, 41, 133, 251, 252, 300
Australia ...	303
Austria ...	369
Belgium ...	380
Bosnia and Herzegovina ...	376
Brazil ...	383
Canada ...	323
Chili ...	386
Cuba ...	390
Dutch East Indies ...	392
France ...	399
German Empire ...	406
Greece ...	420
Hungary ...	374
India ...	341
Italy ...	427
Japan ...	429
Java ...	392
New Zealand ...	349
Norway ...	436
Nova Scotia ...	326
Prussia ...	413
Queensland ...	308
Russia ...	448
Saxony ...	418
Spain ...	455
Sweden ...	457
Turkey ...	462
United States ...	466
Manjak, Output of Barbados ...	315
" " Trinidad ...	359
Map of British Isles, shewing Inspection districts ...	48
Marble, Output of :	
Algeria ...	363
Belgium ...	380
France ...	399
Greece ...	419
Mexico ...	432

## Page.

Marl, Output of :	
United Kingdom ( <i>included with "Clay"</i> ).	
Bavaria ...	411
France ...	399
United States ...	466
Maryland, Accidents at Coal Mines ...	468
" Persons employed ...	465
" Coal-cutting machines ...	463
Maryport and Carlisle Railway Coal and Coke traffic ...	183
Matches or smoking, Explosions of fire-damp caused by 74, 75	
Mayo Co., Coke ...	195
" Limestone ...	157, 250
" Persons employed ...	67, 157
Meath Co., Gravel and sand ...	156, 310
" Igneous rocks ...	156, 312
" Limestone ...	157, 250
" Persons employed ...	67, 157
Mechanical Coal-cutters, number in use in United Kingdom, and coal got by ...	109
" " " United States ...	463
Melaphyre, Output of Bavaria ...	411
Mercury ( <i>see</i> Quicksilver).	
Merionethshire, Clay ...	154, 170
" Coke ...	194
" Gold ...	155, 207
" Igneous rocks ...	154, 211
" Limestone ...	155, 249
" Manganese ore ...	155, 251
" Sandstone ...	155, 264
" Slate ...	155, 268, 270
" Death-rate from accidents ...	92
" Persons employed ...	63, 66, 92, 155
Mexico, Accidents ...	296, 433
" Mineral output ...	295, 432
" Persons employed ...	294, 432
" Legislation ...	433
Mica, Output of :	
United Kingdom ...	10, 133, 253, 300
Canada ...	323
Ceylon ...	333
India ...	341
Ontario ...	327
Quebec ...	328
Saxony ...	418
United States ...	466
Micaceous Iron ...	254
Michigan, Accidents at Coal Mines ...	468
" Output of Iron Ore ...	468
" Persons employed ...	465
" Coal-cutting machines ...	463
Middlesex, Chalk ...	152, 168
" Chert and flint ...	152, 169
" Clay ...	152, 170
" Coke ...	194
" Gravel and sand ...	152, 209
" Lead smelters ...	247
" Persons employed ...	65, 153
Midland coal-fields, Counties ...	54
" " Fatal accidents ...	88-92
" " Output of Minerals ...	176, 177
" " Persons employed ...	55, 56, 177
Midland Railway Coal and Coke traffic ...	183
Millstones, Output of :	
France ...	400
Greece ...	420
Servia ...	451
United States ...	466
Mine, Definition of ...	5
Mineral oil ( <i>see</i> Petroleum).	
Mineral output of the several Coal-fields ...	176, 177
" " per person employed ...	177
Mineral output of :	
United Kingdom, summary ...	10, 133-135, 300
British Empire, summary ...	295
Foreign Countries, summary ...	295



	Page.
Mineral, Output of— <i>cont.</i>	
Mines in each county ... ..	136-143
Quarries in each county ... ..	144-149
Shallow workings, &c., in each county ...	150, 151
Mineral output, County summary, all Mines, Quarries, &c. ... ..	152-157
Mineral paints, Output of United States ...	466
Mineral waters, Output of :	
Canada ... ..	333
Italy ... ..	427
Spain ... ..	455
United States ... ..	466
Minnesota, Output of Iron Ore ... ..	468
Mines and Quarries, Inspection districts ...	47, 48
Miscellaneous fatal accidents at Mines ...	22-25, 35, 42, 43, 73, 81-85
" " Quarries ... ..	26, 27, 46, 97, 101, 102
" non-fatal accidents at Mines ... ..	28-31
" " " Quarries ... ..	32, 33
Missouri, Accidents at Coal Mines ... ..	468
" " " Ore ... ..	469
" Persons employed ... ..	465
" Coal-cutting machines ... ..	463
Molybdenite, Output of Australia... ..	303
" " " Natal ... ..	346
" " " New South Wales ... ..	306
" " " Norway ... ..	436
" " " Queensland ... ..	308
" " " Saxony ... ..	418
" " " South Australia ... ..	310
Monaghan Co., Coke... ..	195
" Limestone ... ..	157, 250
" Persons employed ... ..	67, 157
Monazite, Output of :	
Brazil ... ..	383
United States ... ..	466
Monkland Canal, Coal and Coke traffic ...	186
Monmouthshire, Briquettes ... ..	196
" Clay ... ..	152, 170
" Coal ... ..	152, 174, 178
" Coke ... ..	194
" Gravel and sand ... ..	152, 209
" Iron ore ... ..	152, 215, 216
" Limestone... ..	153, 249
" Sandstone... ..	153, 264
" Blast furnaces ... ..	224, 227
" Coal traffic ... ..	182
" Coking ovens ... ..	195
" Death-rate from accidents ... ..	92
" Persons employed ... ..	57, 62, 65, 92, 153
Monobel Powder, Accidents with ... ..	82, 100
Montana, Accidents at Coal Mines ... ..	468
" " " Ore ... ..	469
" Persons employed ... ..	465
" Coal-cutting machines ... ..	463
Montgomeryshire, Barytes ... ..	154, 163, 165
" Clay ... ..	154, 170
" Coal ... ..	194
" Igneous rocks ... ..	154, 211
" Lead ore... ..	155, 238, 241
" Limestone ... ..	155, 249
" Sandstone ... ..	155, 264
" Silver ... ..	238, 241
" Slate ... ..	155, 268, 271
" Zinc ore... ..	155, 281, 283
" Persons employed ... ..	63, 66, 155
Morocco, Mineral workings of ... ..	433
Mysore Gold Mines, Accidents ... ..	344
" " " Persons employed ... ..	344

## N.

	Page.
NAIRN, Coke ... ..	194
" Igneous rocks ... ..	154, 212
" Sandstone ... ..	155, 265
" Persons employed ... ..	66, 155
Naked lights, Explosions of fire-damp caused by	74-77
Naphtha ( <i>see Petroleum</i> ).	
Natal, Accidents ... ..	296, 346
" Mineral output ... ..	295, 346
" Persons employed ... ..	294, 346
National Colliery Accident... ..	76
Natural gas, Output of :	
United Kingdom ... ..	10, 133, 253
Canada ... ..	323
Ontario ... ..	327
United States ... ..	466
Nagri Sembilan, Mineral Output ... ..	336
Newbattle Colliery Accident ... ..	84
New Caledonia, Mineral output ... ..	295, 434
" Persons employed ... ..	294, 434
Newfoundland, Accidents ... ..	296, 348
" Mineral output of ... ..	295, 347
" Persons employed ... ..	294, 347
New Guinea ( <i>see British New Guinea</i> )	
New Mexico, Accidents at Coal Mines ...	468
" Persons employed ... ..	465
" Coal-cutting machines ... ..	463
New South Wales, Accidents ... ..	296, 297, 304, 306
" Mineral output ... ..	305, 306
" Persons employed ... ..	303, 305
" Legislation ... ..	307
New Zealand, Accidents ... ..	296, 350
" Mineral output ... ..	295, 349
" Persons employed ... ..	294, 349
Nicaragua, Output of Gold and Salt	295, 435
Nickel or nickel ore, Output of :	
United Kingdom ... ..	41, 197, 253
Canada ... ..	323
German Empire... ..	405
New Caledonia ... ..	434
Norway ... ..	436
Ontario ... ..	327
Peru ... ..	439
Prussia ... ..	413
Saxony ... ..	417
United States ... ..	467
Nigeria, Northern, Mineral wealth ... ..	350
" Southern, " " ... ..	353-354
Nitrate of soda, Output of Chili ... ..	386
Non-fatal accidents at Mines in United Kingdom	28-31
" " Quarries ... ..	32, 33
Norfolk, Chalk ... ..	152, 168
" Chert and flint ... ..	152, 169
" Clay ... ..	152, 170
" Coke ... ..	194
" Gravel and sand ... ..	152, 209
" Sandstone ... ..	153, 264
" Persons employed ... ..	65, 153
Northamptonshire, Clay ... ..	152, 170
" Coke ... ..	194
" Gravel and sand ... ..	152, 209
" Iron ore ... ..	152, 215, 216, 220
" Limestone ... ..	153, 249
" Sandstone ... ..	153, 264
" Blast furnaces ... ..	224, 227
" Persons employed ... ..	59, 62, 65, 153
North Borneo, Mineral deposits ... ..	316
North British Railway, Coal and Coke traffic ...	184
North Dakota, Persons employed at Coal Mines...	465
" " Coal Cutting Machines ... ..	463
North Eastern Railway, Coal and Coke traffic ...	183
Northern Coal-field, Counties ... ..	54
" Fatal accidents ... ..	88-92
" Output of Mineral ... ..	176, 177

	Page.		Page.
Northern Coal-field, Persons employed ...	55, 56, 177	Ontario, Accidents ...	296, 297, 327
Northern Nigeria ( <i>see</i> Nigeria).		" Mineral output ...	327
North Staffordshire Railway, Coal and Coke traffic ...	183	" Persons employed ...	326
" " " Salt conveyed ...	262, 263	Opal, Output of :	
Northumberland, Barytes ...	152, 163, 164	Australia ...	303
" Clay ...	152, 170	New South Wales ...	306
" Coal ...	152, 174, 178	Queensland ...	308
" Coke ...	194	Orange River Colony, Accidents ...	296, 352
" Gravel and sand ...	152, 209	Mineral output ...	295, 351
" Igneous rocks ...	152, 211	Persons employed ...	294, 351
" Lead ore ...	153, 238, 239	Oregon, Persons employed at Coal Mines ...	465
" Limestone ...	153, 249	Orkney, Coke ...	194
" Sandstone ...	153, 264	" Sandstone ...	155, 265
" Silver ...	238, 239	" Persons employed ...	66, 155
" Zinc ore ...	153, 281, 282	Output of Minerals from Mines in each inspection	
" Coal traffic ...	183	district under the Coal Mines Act ...	14, 15
" Coking ovens ...	195	Do. do. per Person employed ...	14, 15
" Copper smelters ...	205	Output of Minerals from Mines in each inspection	
" Death-rate from accidents ...	92	district under the Metalliferous Mines Act ...	16, 17
" Lead smelters ...	247	Output of Minerals from Quarries in each inspection	
" Persons employed ...	57, 62, 65, 92, 153	district under the Quarries Act ...	18, 19
North Wales Coal-field, Counties ...	54	Output of Minerals from certain shallow workings ...	20, 21
" Fatal accidents ...	88-92	Output of Minerals from each county under the Coal	
" Output of Mineral ...	176, 177	Mines Act... ..	136-139
" Persons employed ...	55, 56, 177	Output of Minerals from each county under the Metal-	
Norway, Accidents ...	296, 436	liferous Mines Act ...	140-143
" Mineral output ...	295, 436	Output of Minerals from each county under the	
" Persons employed ...	294, 436	Quarries Act ...	144-149
Nottinghamshire, Briquettes ...	196	Output of Minerals from shallow workings, brine	
" Clay ...	152, 170	wells, &c. ...	150, 151
" Coal ...	152, 174, 178	Output of Minerals from the several Coal-fields ...	176, 177
" Coke ...	194	" " from Mines, 1873 to 1905 ...	39
" Gravel and sand ...	152, 209	" " from Mines and Quarries, 1873 to	
" Gypsum ...	152, 210	1905... ..	40, 41
" Iron pyrites ...	152, 235	" " in United Kingdom, General	
" Limestone ...	153, 249	Summary ...	10, 133
" Sandstone ...	153, 264	" " in British Colonies ...	295
" Blast furnaces ...	224, 228	" " in Foreign Countries ...	295
" Coal traffic ...	182, 183	" " ( <i>see</i> also under each Colony and	
" Coking ovens ...	195	Country, and under each Mineral).	
" Copper smelters ...	205	Overwinding, Accidents from ...	22-25, 28, 29, 79, 80
" Death-rate from accidents ...	92	Oxfordshire, Chalk ...	152, 168
" Persons employed ...	57, 62, 65, 92, 153	" Chert and flint ...	152, 169
Nova Scotia, Accidents ...	296, 297, 326	" Clay ...	152, 170
" Mineral output ...	326	" Coke ...	194
" Persons employed ...	325	" Gravel and sand ...	152, 209
		" Iron ore ...	152, 220
		" Limestone ...	153, 249
		" Sandstone ...	153, 264
		" Persons employed ...	62, 65, 153
		Oxokerite, Output of Austria ...	370
		" " Russia ...	418

## O.

## OCHRE AND UMBER, Output of :

United Kingdom ...	10, 41, 133, 253-255, 300
Bavaria ...	411
Belgium ...	380
Canada ...	323
Cyprus ...	335
France ...	400
Japan ...	429
Quebec ...	328
Saxony ...	418
Ohio, Accidents at Coal Mines ...	468
" Persons employed ...	465
" Coal-cutting machines ...	463
" Output of Coal ...	467
Oil shale, Output of :	
United Kingdom ...	10, 41, 133, 255, 256, 300
Australia ...	303
New South Wales ...	306
Oil stones, Output of United States ...	466
Onyx, Output of :	
Algeria ...	363
France ...	400

## P.

PAHANG, Mineral output ...	336
Palladium, Output of Ontario ...	327
Panama, Mineral Output ...	295, 437
Paraguay, Mineral deposits of ...	437
Patent fuel, Exported ...	179, 191-193
" Shipped coastwise ...	187-189, 193
Paving stone, Output of :	
Bavaria ...	411
Belgium ...	380
France ...	400
Newfoundland ...	347
Tunis ...	460
Peat, Output of :	
Canada ...	323
France ...	399
Holland ...	421
Italy ...	427
Japan ...	429
Ontario ...	327



	Page.
Peebles, Coal ... ..	154, 175, 178
"  Coke ... ..	194
"  Igneous rocks ... ..	154, 212
"  Limestone ... ..	155, 250
"  Sandstone ... ..	155, 265
"  Persons employed ... ..	57, 66, 155
Pelton Colliery Accident ... ..	88
Pembroke, Coal ... ..	154, 175, 176, 178
"  Coke ... ..	194
"  Igneous rocks ... ..	154, 211
"  Limestone ... ..	155, 249
"  Sandstone ... ..	155, 264
"  Slate ... ..	155, 268
"  Persons employed ... ..	57, 66, 155
Pennsylvania, Accidents ... ..	468
"  Output of Coal ... ..	464, 465, 467
"  Persons employed ... ..	465
"  Coal-cutting machines ... ..	463
Perak, Mineral Output ... ..	337
Permitted Explosives, Accidents caused by ... ..	82, 100
Permitite, Accidents with ... ..	82
Persia, Minerals obtained in ... ..	437
Persons employed in inspection districts under the Coal Mines Act ... ..	11
Persons employed in inspection districts under the Metalliferous Mines Act ... ..	12
Persons employed in inspection districts under the Quarries Act ... ..	13
Persons employed in each county under the Coal Mines Act ... ..	137, 139
Persons employed in each county under the Metal- liferous Mines Act ... ..	141, 143
Persons employed in each county under the Quarries Act ... ..	65-67, 145, 147, 149
Persons employed in the several Coal-fields ... ..	55, 56, 177
"  "  at Coal Mines ... ..	54-58, 178
"  "  "  Iron Mines ... ..	54, 58-60
"  "  "  "other" Mines ... ..	54, 60-63
"  "  "  different kinds of Quarries ... ..	64
"  "  "  Mines, 1873 to 1905 ... ..	38
"  "  "  Mines and Quarries in United Kingdom, Summary ... ..	6, 9, 53, 157, 294, 299
"  "  "  Mines and Quarries in British Colonies, Summary of ... ..	294
"  "  "  Mines and Quarries in Foreign Countries, Summary of ... ..	294
Persons employed in Mining in :	
Algeria ... ..	294, 362
Australia ... ..	294, 302
Austria ... ..	294, 367, 368
Bahamas ... ..	294, 315
Banca ... ..	391
Bavaria ... ..	411
Belgium ... ..	294, 377, 378
Billiton ... ..	391
Bohemia ... ..	373
Bosnia and Herzegovina ... ..	294, 375
British Borneo ... ..	294, 316
British Columbia ... ..	325
British Guiana ... ..	294, 318
British New Guinea ... ..	319
Bulgaria ... ..	294, 384
Canada ... ..	294, 324-326, 328
Cape Colony ... ..	294, 329
Ceylon ... ..	294, 333
Chili ... ..	294, 386
Corea ... ..	294, 389
Dutch East Indies ... ..	294, 391-393
Egypt ... ..	395
Federated Malay States ... ..	294, 336
France ... ..	294, 398
French Congo ... ..	401
German Empire ... ..	294, 404
Gold Coast ... ..	294, 338
Greece ... ..	294, 419
Greenland ... ..	294, 391

	Page.
Persons employed in Mining in—cont.	
Holland ... ..	294, 421
Hungary ... ..	294, 374
India ... ..	294, 340, 341
Indo-China ... ..	294, 423
Italy ... ..	294, 425, 426
Ivory Coast ... ..	294, 402
Japan ... ..	294, 429
Kimberley ... ..	329, 330
Luxemburg ... ..	294, 404
Madagascar ... ..	294, 431
Mexico ... ..	294, 432
Natal ... ..	294, 346
New Caledonia ... ..	294, 434
Newfoundland ... ..	294, 347
New South Wales ... ..	302, 305
New Zealand ... ..	294, 349
Norway ... ..	294, 436
Nova Scotia ... ..	335
Ontario ... ..	326
Orange River Colony ... ..	294, 351
Peru ... ..	294, 438
Portugal ... ..	294, 441
Prussia ... ..	412
Quebec ... ..	328
Queensland ... ..	302, 308
Redonda ... ..	294, 352
Rhodesia ... ..	294, 353
Russia ... ..	294, 447
Saxony ... ..	417
Servia ... ..	450
Siam ... ..	294, 452
Singkep ... ..	393
South Australia ... ..	302, 310
Spain ... ..	294, 454
Sumatra ... ..	393
Sweden ... ..	294, 457
Switzerland ... ..	294, 458, 459
Tasmania ... ..	302, 311
Transvaal ... ..	294, 355
Trinidad ... ..	294, 359
Tunis ... ..	294, 460
United States ... ..	294, 465
Victoria ... ..	302, 312
Western Australia ... ..	302, 314
Persons employed at Petroleum Wells :	
Austria ... ..	368
Italy ... ..	426
Ontario ... ..	326
Peru ... ..	438
Russia ... ..	447
Persons employed at Quarries :	
Algeria ... ..	362
Belgium ... ..	377
British Guiana ... ..	318
Ceylon ... ..	333
Channel Islands ... ..	334
France ... ..	398
German Empire ... ..	410
India ... ..	340, 341
Italy ... ..	425
Malta ... ..	345
Newfoundland ... ..	347
Portugal ... ..	441
Russia ... ..	447
Servia ... ..	450
South Australia ... ..	309
Sweden ... ..	457
Switzerland ... ..	458, 459
Trinidad ... ..	359
Persons employed at Salt Works :	
Austria ... ..	368
Bosnia and Herzegovina ... ..	375
Cape Colony ... ..	329
German Empire ... ..	405
India ... ..	340, 341

	Page.		Page.
Persons employed at Salt Works— <i>cont.</i>		Portugal, Persons employed	294, 441
Italy ... ..	425	Portuguese East Africa, Mineral deposits	442, 443
Ontario ... ..	326	" Nyasaland " "	443
Peru ... ..	438	" West Africa " "	443
Russia ... ..	447	Potassium, United Kingdom	258
Switzerland ... ..	459	Potassium salts, Output of :	
Persons employed at Turbaries :		German Empire...	405, 406
Holland ... ..	421	Prussia ... ..	413, 414
Italy ... ..	425	Potter's clay, Exported	172
Perthshire, Coke ... ..	194	" Output of :	
" Gravel and sand ... ..	154, 209	United Kingdom	170
" Igneous rocks ... ..	154, 212	France ... ..	399
" Limestone ... ..	155, 250	Tunis ... ..	460
" Sandstone ... ..	155, 265	Pozzolana, Output of Switzerland	459
" Slate ... ..	155, 268	Precious stones, Output of :	
" Persons employed ... ..	66, 155	Australia... ..	303
Peru, Mineral output	295, 439	Borneo, Dutch ... ..	392
" Persons employed ... ..	294, 438	Brasil ... ..	383
Petroleum, Imported	257	British Guiana ... ..	318
" Output of :		Cape Colony ... ..	329
United Kingdom ... ..	10, 133, 256, 300	Ceylon ... ..	333
Austria ... ..	295, 370	Colombia... ..	383
Canada ... ..	295, 323	France ... ..	399
Dutch Borneo ... ..	392	German East Africa ... ..	403
Dutch East Indies... ..	295, 392, 393	India ... ..	341
German Empire ... ..	295, 405	Mexico ... ..	432
Hungary ... ..	295, 374	New South Wales ... ..	305, 306
India ... ..	295, 341	Orange River Colony ... ..	351
Italy... ..	295, 427	Persia ... ..	437
Japan ... ..	295, 429	Queensland ... ..	308
Java... ..	392	Siam ... ..	452
Newfoundland ... ..	295, 347	Spain ... ..	454
Ontario ... ..	327	Transvaal ... ..	355
Peru ... ..	295, 439	United States ... ..	446
Prussia ... ..	413	Prices of sea-borne Coal in the London market...	180, 181
Roumania ... ..	295, 444	" Coal at the pit's mouth ... ..	174, 175, 177, 178, 181
Russia ... ..	295, 448	" " at various shipping ports ... ..	181
Sumatra ... ..	393	" " Diagram shewing fluctuations from 1873	
Trinidad ... ..	295, 359	to 1905 ... ..	281
United States ... ..	295, 466	" Pig iron at the works ... ..	232, 233
Philippine Islands, Mineral deposits	439, 440	" Antimony in London market ... ..	159
Phosphate of alumina, Output of Redonda	352	" Copper " " ... ..	199, 200
Phosphate of lime, Conveyed by railway...	257	" Lead " " ... ..	242, 243
" " Imported ... ..	258	" Standard silver " " ... ..	267
" " Output of :		" Tin " " ... ..	276
United Kingdom 10, 41, 133, 257, 300		" Zinc " " ... ..	285, 286
Algeria ... ..	363	" Cleveland Pig, Copper, Lead, Tin, and Zinc ;	
Aruba ... ..	394	Diagrams shewing fluctuations from 1873	
Belgium ... ..	380	to 1905... ..	287
Canada ... ..	323	Prosecutions under the Cruelty to Animals Act	104, 105
Christmas Island ... ..	334	" " Factory and Workshop Acts ... ..	106
Dutch West Indies ... ..	394	" " Mines Act ... ..	103-105
France ... ..	400	" " Quarries Act ... ..	105, 106
French Guiana ... ..	401	(See also Appeals).	
Porto Rico ... ..	440	Prussia, Accidents ... ..	414-417
Quebec ... ..	328	" Mineral output ... ..	413, 414
Tunis ... ..	460	" Persons employed ... ..	412
United States ... ..	466	Pumice Stone, Output of Canary Islands ... ..	385
Phosphoric Ore, Output of Japan ... ..	429	" " Spain ... ..	455
" " " Russia ... ..	448	" " United States ... ..	466
" " " Spain ... ..	455	Pyrites (see Arsenical pyrites, Copper ore, and Iron pyrites).	
Phthisis Regulations in the Transvaal	357		
Pig iron (see Iron, Pig).			
Platinum, Output of :			
Australia... ..	303		
New South Wales ... ..	306		
Ontario ... ..	327		
Russia ... ..	448		
United States ... ..	467		
Plumbago (see Graphite).			
Porcelain earth, Output of Bavaria ... ..	411		
Porphyry, Output of Australia ... ..	303		
" " Queensland ... ..	308		
Porto Rico, Mineral deposits ... ..	440		
Portugal, Accidents ... ..	296, 442		
" Mineral output ... ..	295, 442		

## Q.

QUARRIES, Death-rate from accidents	8, 34, 46, 94, 95
" Fatal accidents ... ..	7, 9, 26, 27, 46, 93-102
(See also under Accidents.)	
" Fatal accidents at different kinds of	95, 96
" Non-fatal accidents ... ..	32, 33
" Prosecutions of Owners and Workmen	105, 106
" Suggestions for preventing accidents	99, 101
" Remarks on laxity in observance of regulations ... ..	100



	Page.
Quarries, Number at work ... ..	13, 65-67
" Mineral output, summary of... ..	10
" " " in each county ... ..	144-149
" " " inspection district ... ..	18, 19
" Persons employed, summary of ... ..	6, 9, 46, 64
" " " in each county ... ..	65-67, 145, 147, 149
" " " in each inspection district ... ..	13
" " " at different kinds of ... ..	64
Quarries, Output of :	
Algeria ... ..	363
Belgium ... ..	380
France ... ..	399, 400
Italy ... ..	427
Russia ... ..	448
Sweden ... ..	457
Switzerland ... ..	459
Quartz, Output of :	
Belgium ... ..	380
Saxony ... ..	418
United States ... ..	466
Quartzite ( <i>see</i> Sandstone) ... ..	264, 265
Quebec, Accidents ... ..	296, 297, 328
" Mineral output ... ..	328
" Persons employed ... ..	328
Queen's County, Clay ... ..	156, 171
" Coal ... ..	156, 175, 176, 178
" Gravel and sand... ..	156, 210
" Igneous rocks ... ..	156, 212
" Limestone... ..	157, 250
" Coal traffic ... ..	184
" Persons employed ... ..	58, 67, 157
Queensland, Accidents ... ..	296, 297, 304, 309
" Mineral output ... ..	308
" Persons employed ... ..	302, 308
Quicksilver, United Kingdom ... ..	258
" Exported ... ..	259, 260
" Imported ... ..	259
Quicksilver ore, Output of :	
Algeria ... ..	363
Austria ... ..	369
Italy ... ..	427
Japan ... ..	429
Peru ... ..	439
Russia ... ..	448
Spain ... ..	455
United States ... ..	467

## R.

RADNORSHIRE, Coke ... ..	194
" Igneous rocks ... ..	154, 211
" Limestone ... ..	155, 249
" Sandstone ... ..	155, 264
" Persons employed... ..	66, 155
Railway traffic of Coal and Coke ... ..	182-184
Railways, Sidings, and Tramways, Accidents on, at Mines ... ..	22-25, 28-31, 86-88
Railways, Sidings, and Tramways, Accidents on, at Quarries ... ..	26, 27, 32, 33, 101, 102
Redonda, Output of Phosphate of alumina ... ..	352
" Persons employed ... ..	294, 352
Red oxide of iron, Output of Gloucestershire and Somerset ... ..	254
Refiners, Antimony ... ..	159
" Arsenic ... ..	162
Regulus, Exported ... ..	202
" Imported ... ..	203, 204
Renfrewshire, Barytes ... ..	154, 163, 165
" Clay ... ..	154, 170
" Coal ... ..	154, 175, 178
" Coke ... ..	194

	Page.
Renfrewshire, Gravel and sand ... ..	154, 209
" Igneous rocks ... ..	154, 212
" Iron ore ... ..	154, 215, 216
" Limestone ... ..	155, 250
" Sandstone ... ..	155, 265
" Coal traffic ... ..	184
" Persons employed ... ..	57, 60, 63, 66, 155
Rhodesia, Fatal Accidents ... ..	296, 353
" Mineral output ... ..	295, 353
" Persons employed ... ..	294, 353
Roburite, Accidents with ... ..	82
Rock salt, Carted inland ... ..	262
" Conveyed by railways, &c. ... ..	262
" Exported ... ..	263
" Output of United Kingdom ... ..	10, 261
Roofing slates, Exported ... ..	271, 272
Ropes or chains breaking, Accidents from ... ..	26, 27, 32, 33, 79, 80, 101
Rosecommon Co., Coal ... ..	156, 175, 178
" Coke ... ..	195
" Limestone... ..	157, 250
" Sandstone... ..	157, 265
" Coal traffic ... ..	184
" Persons employed ... ..	58, 67, 157
Ross and Cromarty, Coke ... ..	194
" Gravel and sand ... ..	154, 209
" Igneous rocks ... ..	154, 212
" Sandstone ... ..	155, 265
" Persons employed ... ..	63, 66, 155
Roumania, Mineral output ... ..	295, 443, 444
Roxburgh, Coke ... ..	194
" Igneous rocks ... ..	154, 212
" Sandstone ... ..	155, 265
" Persons employed ... ..	66, 155
Russia, Accidents ... ..	296, 449
" Mineral output ... ..	295, 447, 448
" Persons employed ... ..	294, 447
Rutile ( <i>see</i> Titanium).	
Rutland, Coke ... ..	194
" Iron ore ... ..	162, 215, 220
" Limestone ... ..	153, 249
" Sandstone ... ..	153, 264
" Persons employed ... ..	65, 153

## S.

SABA, Sulphur deposits ... ..	394
Safety fuzes, Accidents caused by ... ..	83, 99
Safety lamps, Accidents caused by ... ..	74-76
" General Remarks ... ..	113
St. Helena, Mineral deposits ... ..	353
St. Lucia, Sulphur Mine ... ..	353
St. Martin, Salt workings ... ..	394
Sahara, Salt deposits ... ..	402
Salt, Exported ... ..	263
" Conveyed by railway, canal, &c. ... ..	262, 263
" Rock and white, Output of :	
United Kingdom ... ..	10, 41, 133, 261, 295, 300
Abyssinia ... ..	295, 362
Aden ... ..	295, 302
Algeria ... ..	295, 363
Argentine Republic ... ..	295, 365
Australia ... ..	295, 303
Austria ... ..	295, 369
Bahamas ... ..	295, 315
Bavaria ... ..	411
Bonaire and St. Martin ... ..	394
Bosnia and Herzegovina ... ..	295, 376
Brazil ... ..	295, 389
Canada ... ..	295, 323
Cape Colony ... ..	295, 329
Ceylon ... ..	295, 333

	Page.		Page.
Salt, Rock and white, Output of— <i>cont.</i>		Scotland, Copper smelters ... ..	205
Chili ... ..	295, 386	„ Explosions from naked lights ... ..	77
China ... ..	295, 387	„ Lead smelters ... ..	248
Cochin China ... ..	423	„ Railway and canal traffic of Coal and coke	184, 186
Curaçao ... ..	394	Selangor, Output of Tin ... ..	337
Cyprus ... ..	295, 395	Selkirk, Coke ... ..	194
Dutch West Indies ... ..	295, 394	„ Igneous rocks ... ..	154, 212
Egypt ... ..	395	„ Persons employed ... ..	66, 155
Formosa ... ..	295, 396	Senegal, Gold exported ... ..	295, 402
France ... ..	295, 399	Servia, Accidents ... ..	296, 451
German Empire ... ..	295, 405-407	„ Mineral output ... ..	295, 451
Greece ... ..	295, 420	„ Persons employed ... ..	294, 450
Honduras ... ..	295, 423	Shaft Accidents ... ..	22-25, 28-31, 35, 42, 43, 73, 79, 80
Hungary ... ..	295, 374	Shale ( <i>see</i> Oil shale).	
India ... ..	295, 341	Shetland, Coke ... ..	194
Indo-China ... ..	295, 423	„ Limestone ... ..	155, 250
Italy ... ..	295, 427	„ Sandstone ... ..	155, 265
Japan ... ..	295, 429	„ Persons employed ... ..	66, 155
Mexico ... ..	295, 432	Shipments of China clay, and stone	171
Nicaragua... ..	295, 435	„ Coal, coke, &c. coastwise ... ..	187-189, 193
Northern Nigeria... ..	350	Shot-firing, Accidents caused by, in Mines	75, 76, 83
Ontario ... ..	327	„ „ „ Quarries ... ..	99, 100
Orange River Colony ... ..	295, 351	Shropshire, Barytes ... ..	152, 163, 164
Persia ... ..	295, 437	„ Clay ... ..	152, 170
Peru ... ..	295, 439	„ Coal ... ..	152, 174, 178
Prussia ... ..	413, 414	„ Coke ... ..	194
Roumania ... ..	295, 444	„ Gravel and sand ... ..	152, 209
Russia ... ..	295, 448	„ Igneous rocks ... ..	152, 211
Siam ... ..	295, 452	„ Iron ore... ..	152, 215, 216
South Australia ... ..	310	„ Iron pyrites ... ..	152, 235
Spain ... ..	295, 455	„ Lead ore ... ..	153, 238, 239
Switzerland ... ..	295, 459	„ Limestone ... ..	153, 249
Transvaal ... ..	295, 355	„ Sandstone ... ..	153, 264
Tunis ... ..	295, 460	„ Zinc ore... ..	153, 281, 282
Turkey ... ..	295, 462	„ Blast furnaces ... ..	224, 238
Turks and Caicos Islands	295, 360	„ Coal traffic ... ..	182, 183, 185
United States ... ..	295, 466	„ Coking ovens ... ..	196
Venezuela ... ..	295, 470	„ Death-rate from accidents ... ..	92
Victoria ... ..	313	„ Persons employed ... ..	57, 59, 62, 65, 92, 153
Western Australia	315	Shropshire Union Canal, Coal and Coke traffic ... ..	185
Saltpetre, Output of India ... ..	341	Siam, Mineral output ... ..	295, 452
Sand and gravel, Output of :		„ Persons employed ... ..	294, 452
United Kingdom ... ..	10, 40, 133, 209, 210, 300	Silicon iron ... ..	225
Algeria ... ..	363	Silver bullion and specie, Imported and exported, Value	266
Bavaria ... ..	411	of ... ..	
Belgium ... ..	380	„ extractors and refiners ( <i>see</i> Copper and Lead	
Canada ... ..	323	smelters)... ..	204, 205, 247, 248
France ... ..	400	„ extracted from imported Pyrites ... ..	237, 266
Newfoundland ... ..	347	„ obtainable from British Lead ore ... ..	238-241
Nova Scotia ... ..	326	„ Prices of standard, in London market ... ..	267
Tunis ... ..	460	„ ore, Imported ... ..	266
United States ... ..	466	Silver or silver ore, Output of :	
Sandstone, Output of :		United Kingdom ... ..	10, 133, 265, 266, 300, 301
United Kingdom ... ..	10, 41, 133, 264, 265, 300	Abyssinia ... ..	362
Australia ... ..	303	Algeria ... ..	363
Bavaria ... ..	411	Annam ... ..	423
Queensland ... ..	308	Argentine Republic ... ..	365
Sandstone Quarries, Accidents ... ..	95, 96	Australia ... ..	295, 303
„ „ Persons employed ... ..	64	Austria ... ..	295, 369
Sandwich Islands, Mineral Deposits	449	Bolivia ... ..	295, 382
Santo Domingo, Mineral deposits... ..	449	British Columbia ... ..	324
Sarawak, Mineral output ... ..	317	Canada ... ..	295, 323
Saxonite, Accidents with ... ..	82	Chili ... ..	295, 386
Saxony, Accidents ... ..	418	Colombia ... ..	295, 389
„ Mineral output ... ..	417, 418	Dutch East Indies ... ..	392, 393
„ Persons employed ... ..	417	Ecuador ... ..	295, 394
Scheelite, Output of :		France ... ..	295
Australia... ..	303	German Empire... ..	295, 406, 408
New South Wales ... ..	306	Honduras ... ..	295, 423
Queensland ... ..	308	Hungary ... ..	295, 374
Scotch Coal-fields, Counties ... ..	54	Indo-China ... ..	295, 423
„ „ Fatal Accidents ... ..	88-92	Italy ... ..	295, 427
„ „ Output of minerals ... ..	176, 177	Japan ... ..	295, 429
„ „ Persons employed ... ..	55, 56, 177	Mexico ... ..	295, 432
Scotland, Summary of Mineral output ... ..	135		



	Page.		Page.
Silver or silver ore, Output of— <i>cont.</i>		Sodium sulphate, Output of— <i>cont.</i>	
New South Wales ... ..	306	Italy ... ..	427
New Zealand ... ..	295, 349	Prussia ... ..	414
Norway ... ..	295, 436	Russia ... ..	448
Ontario ... ..	327	Spain ... ..	455
Peru ... ..	295, 439	Somali Coast Protectorate, Mineral deposits ... ..	353
Prussia ... ..	413	Somersetshire, Briquettes ... ..	196
Queensland ... ..	308	" Chalk ... ..	152, 168
Rhodesia ... ..	295, 353	" Chert and flint ... ..	152, 169
Russia ... ..	295, 448	" Clay ... ..	152, 170
Saxony ... ..	418	" Coal ... ..	152, 174, 178
Servia ... ..	295, 451	" Coke ... ..	194
South Australia... ..	310	" Fuller's earth ... ..	170
Spain ... ..	295, 455	" Gravel and sand ... ..	152, 209
Sweden ... ..	295, 457	" Gypsum ... ..	152, 210
Tasmania ... ..	312	" Igneous rocks ... ..	152, 211
Transvaal ... ..	295, 355	" Lead ore ... ..	153, 238, 241
Turkey ... ..	295, 462	" Limestone ... ..	153, 249
United States ... ..	295, 467	" Oohre ... ..	153, 253, 254
Victoria ... ..	313	" Sandstone ... ..	153, 264
Western Australia ... ..	315	" Slate ... ..	153, 268
Silver lead ore, Output of :		" Strontium sulphate ... ..	272
United Kingdom ... ..	238-241	" Coal traffic ... ..	182
Algeria ... ..	363	" Coking ovens ... ..	195
Australia... ..	303	" Copper smelters ... ..	205
France ... ..	399	" Death-rate from accidents ... ..	92
Greece ... ..	420	" Lead smelters ... ..	247
Hungary ... ..	374	" Tin smelters ... ..	279
New South Wales ... ..	306	" Persons employed ... ..	57, 62, 65, 92, 153
South Australia... ..	310	Soudan, Mineral wealth ... ..	396
Spain ... ..	455	South Australia, Accidents ... ..	296, 297, 304, 310
Sweden ... ..	457	" " Mineral output ... ..	310
Tasmania ... ..	312	" " Persons employed ... ..	302, 310
Turkey ... ..	462	Southern Nigeria ( <i>see</i> Nigeria).	
Singkep, Output of Tin ... ..		South Wales Coalfield, Counties ... ..	54
" Persons employed... ..	393	" " Fatal accidents ... ..	88-92
Slate, Output of :		" " Mineral output ... ..	176, 177
United Kingdom ... ..	10, 41, 133, 268-271, 300	" " Persons employed ... ..	55, 56, 177
Bavaria ... ..	411	Spain, Accidents ... ..	296, 455
Belgium ... ..	380	" Mineral output ... ..	295, 454, 455
Canada ... ..	323	" Persons employed ... ..	294, 454
France ... ..	400	Special Rules for Ganister Mines ... ..	112
India ... ..	341	" " Timbering, Remarks of Inspectors ... ..	78
Newfoundland ... ..	347	Spelter ( <i>see</i> Zinc) ... ..	281-286
Portugal ... ..	441	Spiegeleisen ( <i>see</i> Iron) ... ..	225
Quebec ... ..	328	Spitzbergen coal deposits ... ..	456
United States ... ..	466	Staffordshire, Briquettes ... ..	196
Slate Quarries, Accidents ... ..		" Clay ... ..	152, 170
" Persons employed ... ..	64	" Coal ... ..	152, 174, 178
Slates, roofing, Exported ... ..		" Coke ... ..	194
Sligo Co., Barytes ... ..	156, 163, 165	" Gravel and sand ... ..	152, 209
" Coal ... ..	156, 175, 178	" Gypsum ... ..	152, 210
" Coke ... ..	195	" Igneous rocks ... ..	152, 211
" Limestone... ..	157, 250	" Iron ore ... ..	152, 215, 216, 220
" Persons employed ... ..	58, 63, 67, 157	" Iron pyrites ... ..	152, 235
Small detached coalfields, Counties ... ..		" Limestone ... ..	153, 249
" " Fatal accidents ... ..	88-92	" Oil shale ... ..	155, 255
" " Output of minerals ... ..	176, 177	" Salt ... ..	153, 261
" " Persons employed ... ..	55, 56, 177	" Sandstone ... ..	153, 264
Smelters, Antimony ... ..		" Blast furnaces ... ..	224, 228
" Copper ... ..	204, 205	" Coal traffic ... ..	182, 183, 185, 186
" Lead ... ..	247, 248	" Coking ovens ... ..	195
" Tin ... ..	279	" Death-rate from accidents... ..	92
" Zinc... ..	286	" Persons employed ... ..	57, 59, 62, 65, 92, 153
Soapstone, Output of :		" and Worcestershire Canal, Coal and Coke traffic ... ..	185
United Kingdom ... ..	272	" " Salt conveyed ... ..	263
Bavaria ... ..	411	Standard silver, Prices in the London market ... ..	267
France ... ..	400	Steatite ( <i>see</i> Soapstone).	
India ... ..	341	Steel, exported ... ..	233, 234
Spain ... ..	455	Stirlingshire, Clay ... ..	154, 170
United States ... ..	466	" Coal ... ..	154, 175, 178
Soda ( <i>see</i> Nitrate of soda).		" Coke ... ..	194
Sodium, Production in United Kingdom... ..		" Gravel and sand ... ..	154, 209
Sodium sulphate, Output of :		" Igneous rocks ... ..	154, 212
German Empire ... ..	406	" Iron ore ... ..	154, 215, 216

**T.**





	Page.
<b>W.</b>	
WALMS, Coal traffic in North and South Wales ...	182, 183
Explosions from naked lights ...	77
Mineral output of, Summary ...	134
(See also under each County.)	
North and South Wales Coalfields :	
Counties ...	54
Fatal accidents ...	88-92
Mineral output ...	176, 177
Persons employed ...	55, 56, 177
Warwick Canal, Coal traffic ...	185
Warwickshire, Clay ...	152, 170
Coal ...	152, 174, 178
Coke ...	194
Gravel and sand ...	152, 209
Igneous rocks ...	152, 211
Iron ore ...	152, 215, 216
Iron pyrites ...	152, 235
Limestone ...	153, 249
Sandstone ...	153, 264
Coal traffic ...	183, 185
Death-rate from accidents ...	92
Lead smelters ...	248
Tin smelters ...	279
Persons employed ...	57, 62, 65, 92, 153
Washington, Accidents at coal mines ...	468
Persons employed ...	465
Waterford Co., Clay ...	156, 171
Coke ...	195
Gravel and sand ...	156, 210
Igneous rocks ...	156, 212
Limestone ...	157, 250
Sandstone ...	157, 265
Persons employed ...	63, 67, 157
Watering of Roads ...	76
Weaver Navigation Co. Salt conveyed ...	262, 263
Wei-hai-wei, gold mine ...	361
Wells, Brine, dredging, &c., County output of minerals from ...	150, 151
Western Australia, Fatal accidents ...	296, 297, 304, 315
Mineral output ...	315
Persons employed ...	302, 314
Legislation ...	315
Westfalite, accidents with ...	82
Westmeath Co., Coke ...	195
Limestone ...	157, 250
Persons employed ...	67, 157
Westmorland, Barytes ...	152, 163, 164
Coal ...	152, 174, 178
Coke ...	194
Gypsum ...	152, 210
Igneous rocks ...	152, 211
Lead ore ...	153, 238, 239
Limestone ...	153, 249
Sandstone ...	153, 264
Silver ...	238, 239
Slate ...	153, 268, 269
Lead smelters ...	248
Persons employed ...	57, 62, 65, 153
West Virginia, Accidents at Coal Mines ...	468
Output of coal ...	467
Persons employed ...	465
Coal-cutting machines ...	463
Wexford Co., Coke ...	195
Igneous rocks ...	156, 212
Limestone ...	157, 250
Slate ...	157, 268
Persons employed ...	67, 157
Whetstones, Production of :	
Bavaria ...	411
France ...	400
White salt, Conveyed by railway, canal, &c. ...	262, 263
Exported ...	263
Produced in United Kingdom ...	261
Wicklow Co., Coke ...	195
Copper ore ...	156, 197, 198
Gravel and sand ...	156, 210
Igneous rocks ...	156, 212
Iron pyrites ...	156, 235
Limestone ...	157, 250
Oolite ...	157, 258, 254
Persons employed ...	63, 67, 157
Wigtown, Clay ...	154, 170
Igneous rocks ...	154, 212
Persons employed ...	66, 155
Wiltshire, Chalk ...	152, 168
Clay ...	152, 170
Coke ...	194
Gravel and sand ...	152, 209
Iron ore ...	152, 215, 220
Limestone ...	153, 249
Sandstone ...	153, 264
Blast furnaces ...	224, 229
Coking ovens ...	195
Persons employed ...	62, 65, 153
Winding ropes, breakage of ...	80
Wolfram, Output of :	
United Kingdom ...	10, 41, 133, 280, 300
Australia ...	303
Austria ...	369
Bolivia ...	382
France ...	399
German Empire ...	406
Indo-China ...	424
New South Wales ...	306
Portugal ...	442
Queensland ...	308
Saxony ...	418
South Australia ...	310
Spain ...	435
Tasmania ...	312
Tong King ...	424
Worcester Canal, Coal traffic ...	185
Worcestershire, Clay ...	152, 170
Coal ...	152, 174, 178
Coke ...	194
Gravel and sand ...	152, 209
Igneous rocks ...	152, 211
Iron ore ...	152, 215, 216, 220
Limestone ...	153, 249
Salt ...	153, 261
Sandstone ...	153, 264
Blast furnaces ...	224, 229
Coal traffic ...	185
Copper smelters ...	205
Death-rate from accidents ...	93
Persons employed ...	57, 59, 62, 65, 93, 153
Wyoming, Accidents at Coal Mines ...	468
Persons employed at Coal Mines ...	465
Coal-cutting machines ...	463
<b>Y.</b>	
YORKSHIRE, Alum shale ...	153, 158
Barytes ...	152, 163, 164
Briquettes ...	196
Chalk ...	152, 168
Chert and flint ...	152, 169
Clay ...	152, 170
Coal ...	152, 174, 178
Coke ...	194
Copper ore ...	152, 197, 198
Gravel and sand ...	152, 209
Gypsum ...	152, 210
Igneous rocks ...	152, 211



	Page.
Yorkshire, Iron ore ... ..	152, 215, 216, 220
"  Iron pyrites ... ..	152, 235
"  Lead ore ... ..	152, 238-240
"  Limestone ... ..	153, 249
"  Ochre ... ..	153, 253, 254
"  Salt ... ..	153, 261
"  Sandstone ... ..	153, 264
"  Blast furnaces ... ..	224, 229
"  Coal traffic ... ..	182, 183, 185
"  Coking ovens ... ..	195
"  Copper smelters ... ..	205
"  Death-rate from accidents ... ..	92
"  Lead smelters... ..	248
"  Persons employed ... ..	57, 59, 62, 65, 92, 153
"  Coal-field, Counties ... ..	54
"  "  Fatal accidents ... ..	88-92
"  "  Mineral output ... ..	176, 177
"  "  Persons employed ... ..	55, 56, 177
Young persons, Fatal accidents to ... ..	35, 72, 110-112

Z.

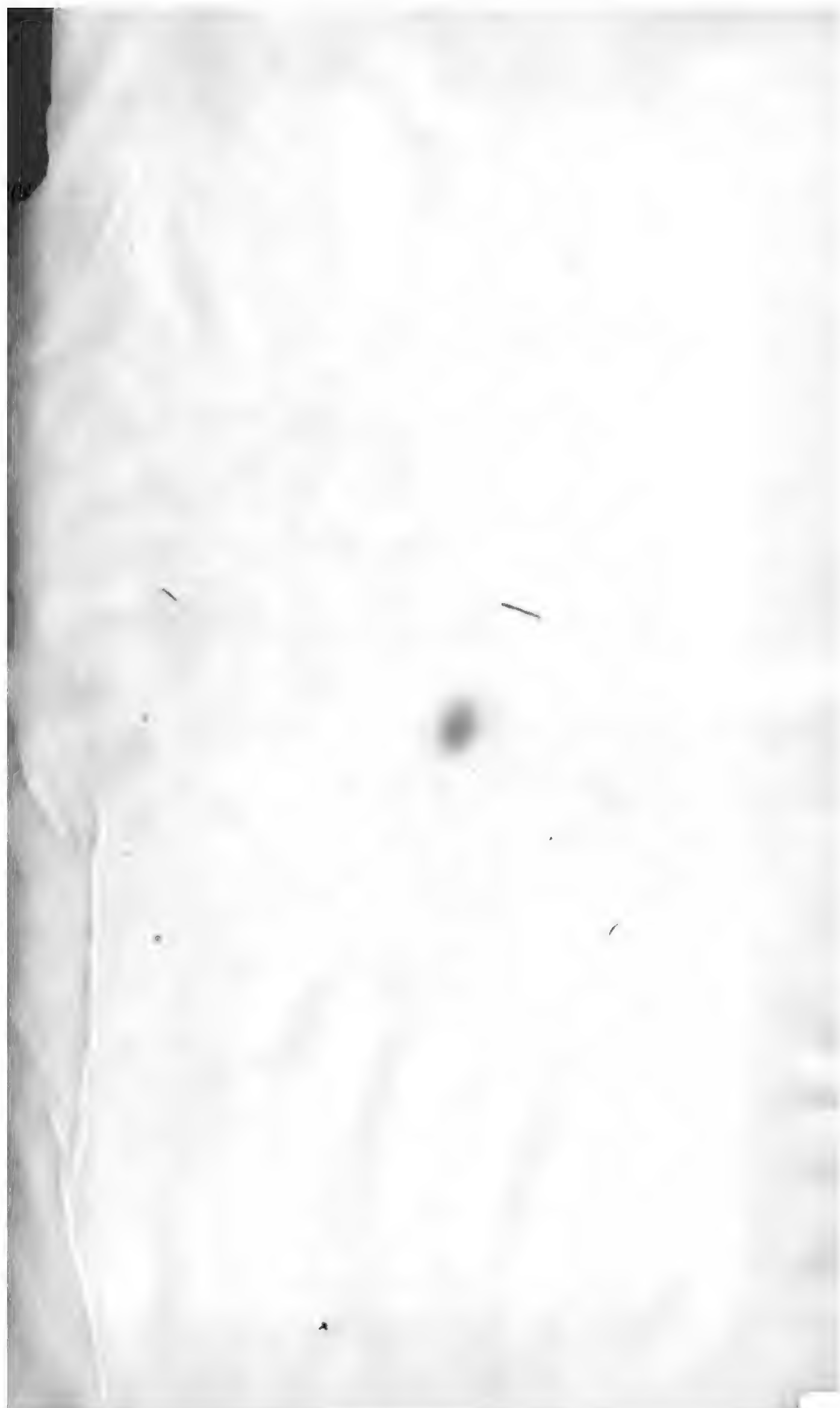
Zinc, Average price in the London market ... ..	285, 286
"  Diagram shewing fluctuations in price from 1873 to 1905 (Plate IV.) ... ..	287
"  Obtainable from British ores ... ..	183, 281-283

	Page.
Zinc, Smelters in United Kingdom ... ..	286
"  and zinc ore, Exported ... ..	284, 285
"  "  Imported ... ..	284
"  or zinc ore, Output of :	
United Kingdom 10, 41, 183, 281-283, 295, 300, 301	
Algeria ... ..	295, 363
Australia ... ..	295, 303
Austria ... ..	295, 369
Belgium ... ..	295, 380
Canada ... ..	295, 323
China ... ..	295, 388
France ... ..	295, 399
German Empire ... ..	295, 406
Greece .. ..	295, 420
Italy ... ..	295, 427
Mexico ... ..	295, 432
New South Wales ... ..	306
Norway ... ..	295, 436
Ontario ... ..	327
Portugal ... ..	295, 442
Prussia ... ..	413
Russia ... ..	295, 448
Saxony .. ..	418
Spain ... ..	295, 455
Sweden ... ..	295, 457
Tasmania ... ..	312
Tunis ... ..	295, 460
United States ... ..	295, 466, 467
Zircon, Output of :	
United States ... ..	466











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PART IV. — COLONIAL AND FOREIGN STATISTICS

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STATISTICS RELATING TO PERSONS EMPLOYED, OIL  
AND ACCIDENTS AT MINES AND QUARRIES IN  
BRITISH COLONIES AND IN FOREIGN COUNTRIES

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Presented to both Houses of Parliament by Command of His Majesty



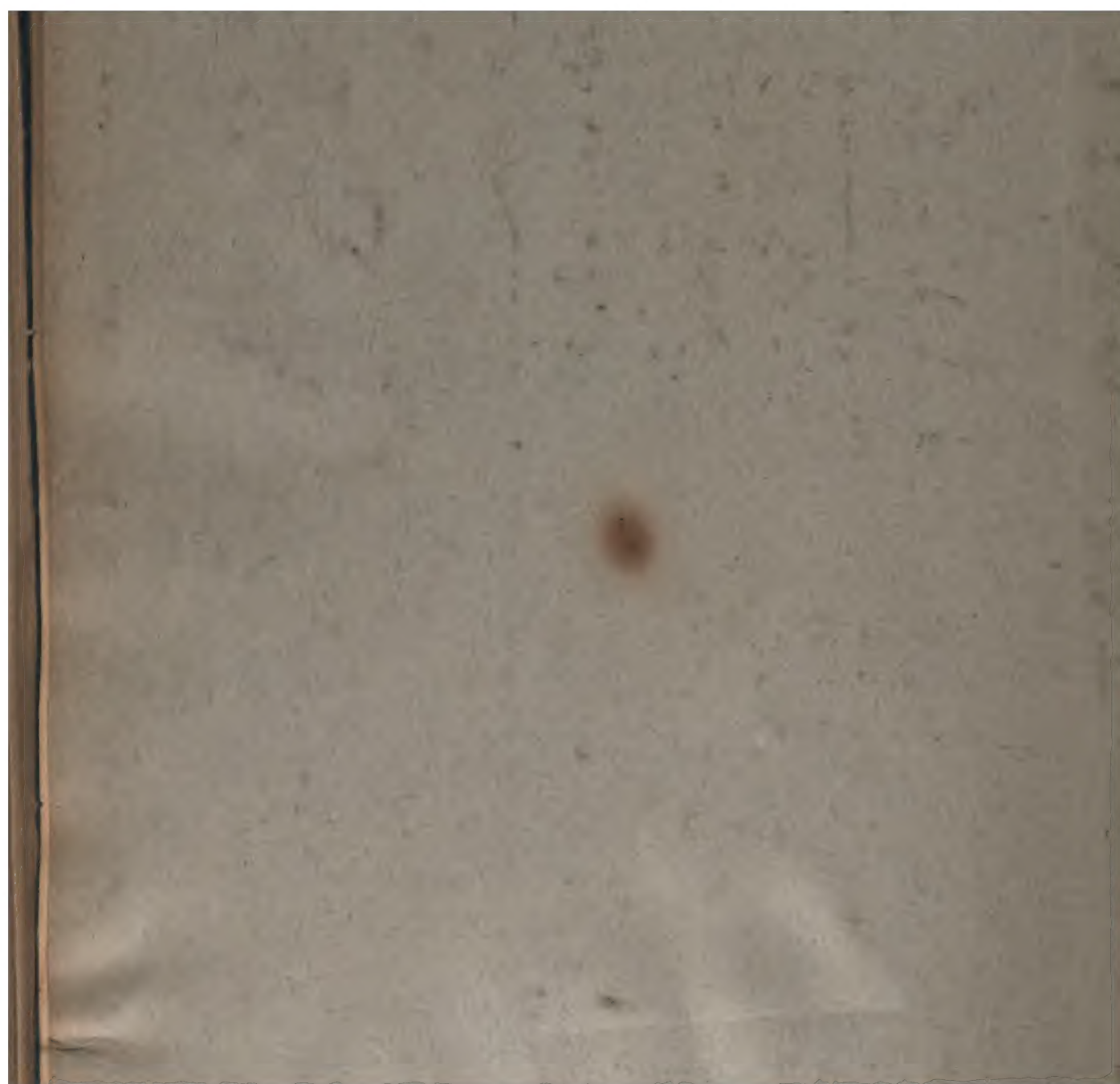












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